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The Use of the Order in Modern Architecture

By Egerton Swartwout

FIRST ARTICLE

THE column was one of the very earliest architectural expressions, and like all primitive forms had its origin in structural necessity. It was the need of some means of support other than that of the walls which led to its adoption, and its development into the classic order is one of the most interesting phases of architectural history. Vitruvius, in his quaintly entertaining but wholly misleading handbook of architecture, gives in great detail the origin of the orders and the rules of their proportion. In all probability there were others before him who wrote on the same subject, and there have been many since. The existing ruins of classic work have been surveyed and measured, excavations have revealed unsuspected construction, and from these investigations careful and, in most instances, correct restorations have been published. The most important and valuable of these publications are in the form of monographs which not only give the measurements and restorations in detail, but also contain extremely interesting information and speculations in the subjoined text. There are also monumental works on archæology and architectural history, but unfortunately these as well as the monographs are not generally familiar to the modern architect, who contents himself usually with a copy of Vignola or Despouy. Buehlmann, too, and Canina are often found, but of them all only the plates are consulted; no one ever thinks of reading the text, and it is only when some new or obscure point comes up, the solution of which cannot be found in the plates, that a frantic search is made for copies of Penrose or other authorities bearing on the subject. Then, too, it often happens that the information sought is not to be found in any one particular book. I have always felt there was a great field for some work that would present careful detailed restorations of the classic orders, supplemented by plans of the buildings in which they were used, with photographs of the existing remains, maps of the localities in which they were found, and a critical text which would not only describe the order as it existed but would also give the reasons which probably influenced the classic architect in doing just what he did in that particular instance; to this could be added a statement showing how the order could be used in modern buildings. It would be a most interesting and valuable work, one of the most valuable that an architect could possess, and I hope that eventually it will be undertaken by some one; but it is a monumental work which would take a lifetime to complete.

Some years ago I made a few notes on the general subject, which were published in ARCHITECTURE, and in which I endeavored to trace the origin and development of the classic orders, but made no attempt to present careful restorations; in fact, the notes were merely supplemental to the restorations, which have already been so carefully and fully presented. In these notes I made a few suggestions as to the use of the order in modern work, but the time at my disposal did not allow me to do more than touch the question. It is the purpose, therefore, of the following articles to supplement my former notes, and to endeavor to show how the classic orders can be adapted to the requirements of modern architecture. I say adapted, because it is very evident that considerable adaptation is necessary. We do not build Greek temples nowadays; our life and, consequently, our buildings are too complex to be expressed in the simple and beautiful forms of classic architecture; we can only adapt some of these forms to our requirements, and this adaptation can only be done successfully when it is done with a thorough understanding of the principles which led the classic architect to do certain things in a certain way. It cannot be done successfully by merely copying an order here and a doorway there, without the slightest regard to the location, material, or size of the prototype. I do not mean by this that we cannot follow, and follow very closely, the best examples of the past. I do not mean that we should try to design an entirely new order whenever we have occasion to use one. On the contrary, it would be the height of folly to neglect the precious opportunity we now possess of profiting by the experiences of those who have gone before. If we are to use a Greek Doric column we cannot do better than to follow the proportions of the Parthenon, provided that the size and materials at our disposal warrant it, but we cannot reproduce the gable end of the Parthenon as a portico of an office-building. Of course, on this point of adaptation as in all points in architecture, there is no definite rule; it is a matter of knowledge of the underlying principles, a matter of taste, a matter of common sense, and of these three the greatest of all is common sense. What mistakes would be avoided, and how architecture could be improved, if only the architect stopped to think; if instead of copying an order blindly he carefully considered how it would look on his particular design in the materials at his disposal; whether it would look well when seen from below, or in silhouette; whether the detail could be simplified or omitted entirely if it proved too expensive; whether the shaft should be fluted; whether the cap would adapt itself to a corner treatment, etc., etc. There are a thousand and one considerations in the use of an order.

Allusion has been made to the underlying principles of classic architecture. Of these principles the greatest is the most self-evident; that an order is a decorated means of support. There can be no question of that; everybody admits it cheerfully, and then generally ignores it. An order should not only actually be an adequate support for what is above it, but it should seem to be an adequate support. That is the difference between architecture and engineering. And again, as the order does express support, it should have something to support. The weight, superimposed, should be commensurate to the supporting members. In the Greek Doric order, for example, the face of the architrave is considerably beyond the upper diameter of the column; if it were not so, the entablature when seen across the angle would not seem to impose enough weight on the powerful abacus. Structurally, perhaps, it would be better if the architrave was on the column face, and was kept just free from the projecting abacus, and in the early Doric examples it was always in this position. But the outline thus obtained at the corner was not satisfactory to the Greeks, and they gradually extended the architrave outward until they arrived at the perfection of outline of the Parthenon. It was very simple, really; only common sense in realizing that there was no fixed rule, but that whatever looked the best was the best. The same thing applies to any order, and to pilasters as well as columns; I should say particularly to pilasters. The abacus is nothing but a survival of the plinth or plate placed on top of the column to give additional bearing; its practical function has become lost in its decorative quality to some extent, but the eye instinctively recalls this function and demands that the abacus be given something to support. It is, therefore, safe to say that the architrave face should always be, or seem to be, in advance of the main face of the supporting member below it. This principle was recognized by the Greeks in the best period of their work, and the Romans appreciated it, if they did not always apply it. It was very generally followed in the arcuated systems of the Romanesque and Gothic periods, but the Renaissance architects seemed entirely ignorant of it; their treatises on architecture as well as their completed work show the architrave face on a line with the face of the main supporting member below it, and also show the frieze face in the same line. This latter refers to another principle closely related to the first, which will be referred to later on.

As I have already said, this relation of faces was appreciated by the Greeks, and is most clearly shown in the main entablature and columns of the Parthenon; the architrave has a very noticeable projection beyond the upper diameter of the column; it is approximately half-way between the upper diameter of the column and the extreme projection of the abacus, and about on the column face at one-third the height of the column. This projection reaches its extreme in the Greek Doric because of the great size and projection of the abacus. In the other orders, on account of the relatively small size of the abacus, it is generally sufficient to keep the lowest architrave face approximately over the upper diameter of the column because when seen across the angle the square corner of the architrave as well as the abacus projects quite materially beyond the column face. I say approximately over the column face because in some cases when the abacus is heavier and of greater projection than usual it is advisable to project the architrave slightly. It is all a question of design and common sense, and can be determined by a large-scale model or by a careful projection of the corner on paper; but in the case of a model or a paper projection the greatest care is necessary; a little carelessness in laying out or a slight shrinkage or warping of the model will give an entirely wrong impression; also in a model it is extremely difficult to establish the centre of the column exactly in relation to the architrave above, and even more difficult to measure with exactness the relations finally established.

This necessity of the projection of the architrave is much more apparent in the case of pilasters than columns, because the pilasters, being square in plan, retain a constant relation to the architrave above, whether seen in direct elevation or on the diagonal. In this case the rule is invariable: the lowest architrave face should always project beyond the pilaster face. Unless this is done the abacus supports nothing at all and the entire cap becomes an unnecessary ornament, and also when seen from below the excessive projections of the abaci break into the line of the architrave with a most unpleasant effect. This is particularly noticeable if the projection of the pilasters is slight, in which case it sometimes happens that the projection of the abacus beyond the architrave face exceeds the projection of the pilaster, or that of the architrave face from the wall, and the cap has consequently an unstable appearance. Here again there is no general rule; the architrave face should project somewhat beyond the pilaster face, but the amount of projection is governed entirely by the character of the cap and the projections of the abacus—it is a question of design; but in general it can be said that the more the pilaster projects from the wall, the less need be the projection of the architrave face beyond the pilaster face. This is because the greater the projection of the pilaster the more the side of the cap becomes in evidence, and the better becomes the feeling of balance and stability. In the case of a pier the architrave face need project very little beyond the pier face unless the relation of faces is seen across the angle, and similarly the relation may approach the normal in the case of columns in antis, that is, the width of the beam over the column can be approximately the width of the upper diameter, except in such cases in which the anta is treated more as a pilaster, and the entablature carries for some distance beyond the front of the pilaster. In this case, if the architrave face is projected beyond the pilaster face, it would project unduly beyond the column face if the column centred on the pilaster, owing to the diminution of the column. In order to adjust this difference it is generally advisable to put the upper face of the column approximately on the outer face of the pilaster or a little behind it; the side of the pilaster then will be slightly narrower than the normal; the front of the pilaster could retain the normal width, and the discrepancy between the two sides would not be noticeable unless, indeed, the pilasters were fluted; in that case some further adjustments would be necessary; possibly, the fluting would have to be eliminated. I need not add that this general relation of faces is a very delicate one, and is somewhat comparable to the entasis of a column; it adds an element of beauty and stability, but it must not be so pronounced as to be noticeable. If the departure from the normal is distinctly apparent at first glance, it defeats its own purpose and is objectionable.

In close connection with the relation of faces of the architrave and its support below is the relation of faces of the frieze and architrave. This is an expression of the same principle of support which is the inherent feeling in the entire order. As I have shown in the notes heretofore published, the line of support is not a straight vertical line. Both theoretically and artistically this would be wrong. The supporting member should be wider at the bottom than at the top, and the artistic effect is improved if this line is not straight but slightly curved. The supporting member does not spring directly from the ground; for practical and artistic reasons it needs a base, which may be individual to each member or common to all. At the top there is necessarily a cap or plate to provide a more adequate bearing for the superimposed weight; this cap is wider than the top of the supporting member, and the line of support which inclines inward from the ground past the base up to the cap takes a reverse curve outward at the level of the cap. This reverse curve is followed by the superimposed crowning motive, whether it be the primitive beam with its projecting rafters, or whether it is in its ultimate form of the classic entablature. It is a crowning motive, and as such naturally projects beyond the walls or the supports below. The same general outline is expressed with the utmost simplicity in the batter of the walls of an Egyptian pylon and in the reverse curve of the simple cornice above. This slightly curved inclination with a reverse curve above is then the general governing line of the entire order. From the neck of the cap starts the reverse curve, and this gives the general character of the cap and of the entablature. All surfaces, all mouldings, must follow this curve in principle. If the frieze face should be placed over the lowest face of the architrave it would not follow this curve; it would cause a break in the continuity of the entablature. The architrave, whether considerably projecting, as in the Greek Doric, or substantially on the upper column face, as in the other orders, seems, when seen across the angle, to project considerably beyond the column face, and echoes the reverse curve, which starts with the cap. The frieze then must follow this general line whether ornamented or not (the ornament plays an important part in the curve, as I shall shortly show), and the cornice above the frieze is the culmination of the reverse curve. It has sometimes been stated that the frieze is an indication of the wall of the building, and it therefore should preserve the verticality of the wall. This is not so; whatever may be the derivation of the frieze, it is in the classic orders a distinct part of the entablature, and should be treated as such.

Of course the above principle is general in its application and cannot be followed with absolute literalness. It does not follow that in all orders the frieze should be actually beyond the architrave face. It only should be so treated that there is no break in the continuity of the curve. In the Greek Doric, for instance, the architrave has a slight inclination inward, and the triglyphs are on the architrave face and have also an inward inclination, but this is because the column shaft has such an apparent inclination, due to its excessive diminution and to the inward inclination of its axis, that any sudden change to verticality in the large surfaces of the architrave and frieze would produce an unpleasant break in the line and would lessen the effect of stability that is such a feature of the Greek Doric temple. But in spite of the similarity of plans of the architrave and frieze, the whole effect of the order is entirely in harmony with the line of support above described.

In all orders other than the Greek Doric the architrave is not plain, but consists of a series of stepped faces capped by a moulded member, and its outline consequently adheres more closely to the line of support, and in these cases the frieze must always seem to project somewhat to follow this line. In the Greek Ionic the frieze was usually ornamented with sculpture in fairly high relief, and it is this sculpture which gives the real outline of the frieze at the corners, and as it projects in mass quite well beyond the architrave face, the feeling of the reverse curve is very strongly pronounced.

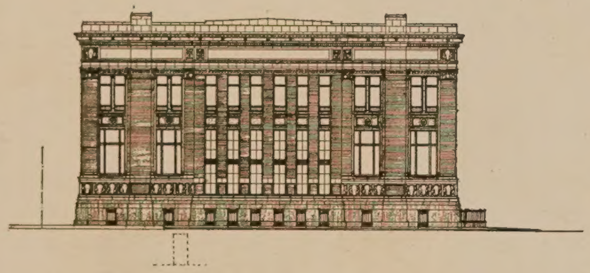
The actual face of the frieze, that is, the vertical background of the sculpture, is naturally behind the architrave face in order to provide room for the sculpture, and it sometimes happens that this face only is shown in the representations of the order given in the books of reference, and consequently the order as it is so shown is copied blindly by men who should know better; the frieze is left unornamented by sculpture, and has a most unpleasant recession, and the outline of the entablature is completely lost.

In connection with the sculpture of the frieze there is one point that is very commonly overlooked; namely, the outline at the corner. If the sculpture or ornament is kept away from the corner, the recessed background only will show on the diagonal view and the outline will be lost. The sculpture must run around the corner, and at the corner must be so designed that there will be more, or at least as much, projection at the top as at the bottom. In other words, the outline must follow the reverse curve. This applies to architecturally ornamented friezes as well as to those having sculptured ornament. The Renaissance architects had an appreciation of this point, although, as I have said, they were unfamiliar with the general principles of the relation of the faces of the architrave and frieze.

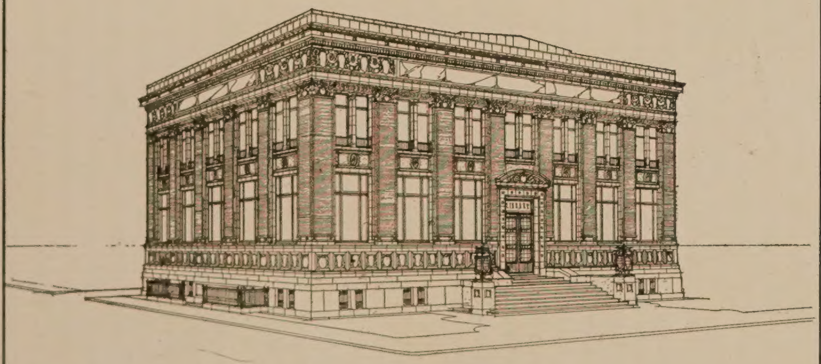
A very noteworthy example is in the frieze of the Colleoni Monument in Venice, where, in order to supply the requisite stability and strength of outline needed for the pedestal of such a robust and powerful statue, a cartouche has been placed at the corner of the frieze, which emphasizes the reverse curve and tends to unify the entire entablature. Unfortunately, there are numerous examples where this principle has not been followed; the sculptured frieze of the Arc de Triomphe in Paris is not accented at the corners, and there is a consequent recession at the top, which serves to separate the cornice from the rest of the entablature, an effect which is heightened by the great projection of the cornice and the relative shortness of the brackets. Also in the Madeleine in Paris the frieze is ornamented with festoons finished at the corners with candelabra; these candelabra have much more projection at the bottom than at the top, and consequently the outline of the candelabra meeting the corner outline of the projecting architrave form a convex surface apparently coming to a point at the top of the architrave. This line is very unpleasant and detracts seriously from the silhouette of the structure. Innumerable similar instances could be cited which would show the same disregard of this simple and apparent principle. The effect is so bad and the remedy is so easy that it is surprising that nothing has ever been done to remedy these defects, even after the work is in place. It is surprising also that such things should be done at all, and yet I suppose the reason is apparent.

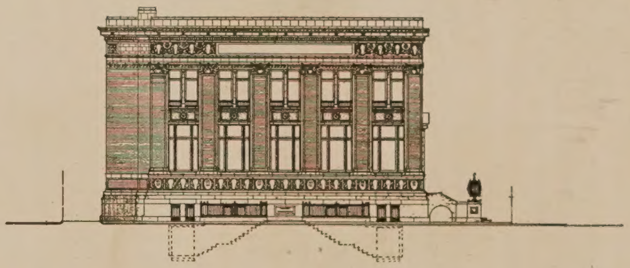
We are so accustomed to take the classic orders as we find them in the books that we never stop to think what the detail means; nor do we study the order in the ensemble. It is usually drawn out at a small scale, and the actual detail is left to some inexperienced draftsman, who takes it straight from Despouy, Vignola, or Buehlmann, and who generally does not hesitate to change the proportions from the original drawing or sketch if the sketch does not agree with what he finds on the plate.

The models, too, which should be the means of invaluable study, are usually made piecemeal, and only show isolated fragments of ornament. Often parts of the ornament are approved and cast before the rest of the ornament, if the order has been started. The result cannot be satisfactory. The only safe way to study an order is from a very carefully made scale model, which should be complete and show all the detail in mass at least, and with at least two of the columns and the stylobate. The architrave and frieze should be made in separate pieces, so that the proper relation of faces can be studied. The full-size model can then be safely based on the proportions finally approved on the scale model, but the full-size model should also show a complete section of the entablature with the column cap in the proper relation, and it should be studied as far as possible from the distance and point of view from which it is generally seen. This entails, I know, considerable trouble and much relative expense, but the trouble and expense are slight compared with the results that are attained.

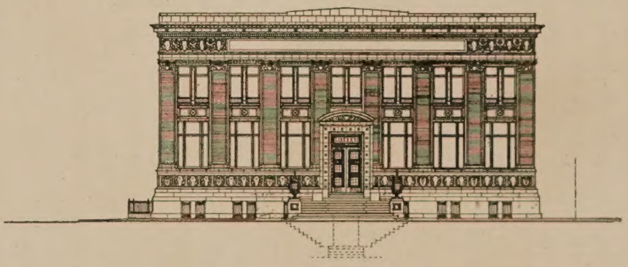


—REAR ELEVATION—





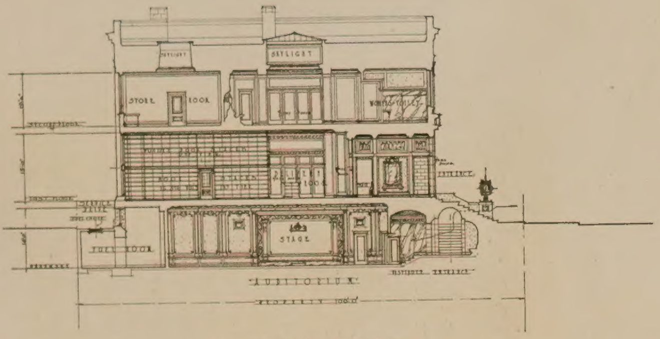
-CLINTON AVENUE ELEVATION-



-BERGEN AVENUE ELEVATION-

WINNING DESIGN FOR NEW BERGEN BRANCH LIBRARY BUILDING, JERSEY CITY, N. J.

Arthur Frederick Adams, Architect.



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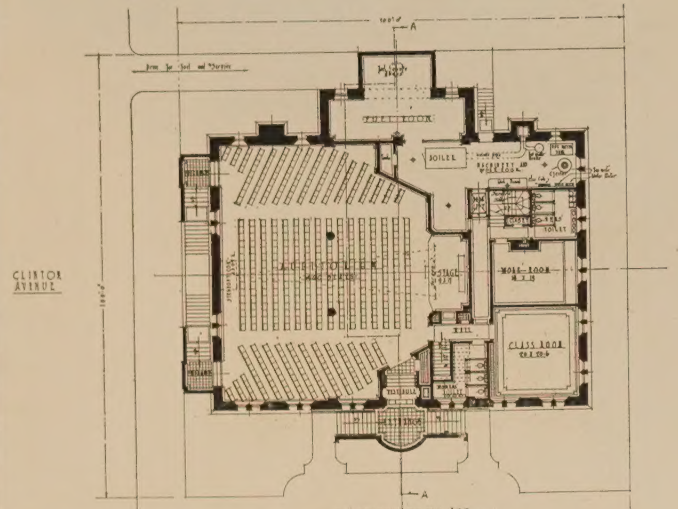
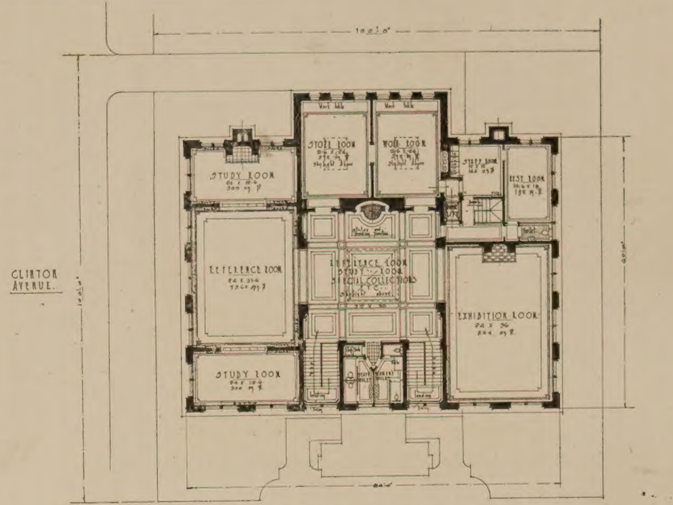
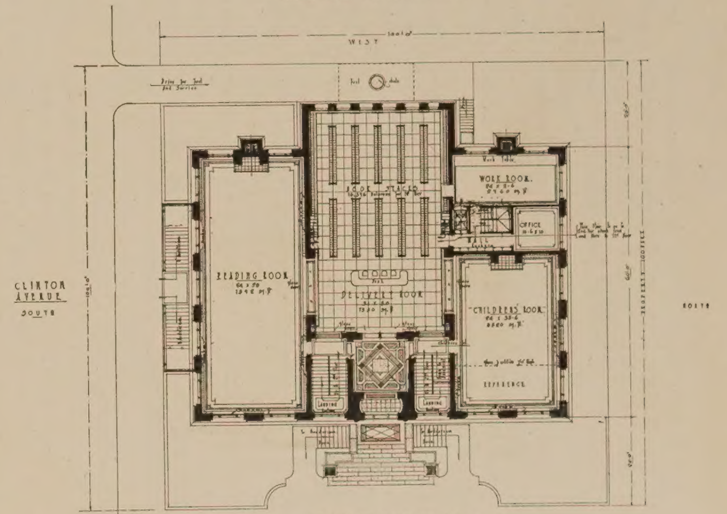


— BASEMENT PLAN —



— SECOND FLOOR PLAN —



— MAIN FLOOR PLAN —

WINNING DESIGN FOR NEW BERGEN BRANCH LIBRARY BUILDING, JERSEY CITY, N. J.

Arthur Frederick Adams, Architect.

Dead Styles

By *Albert C. Phelps*

A SHORT time ago I read in an English architectural journal a criticism on American architecture in which the author asserted that American architects had not yet gotten beyond the stage of the revival and miscellaneous application of dead styles. The term "dead styles" was not a new one, and I could not help but admit the justice of the comment concerning their inappropriate use; however, it seemed to me that it illustrated a common misconception of what an architectural style really is.

Styles and fashions are often confused, although, I suppose, from one point of view they are synonymous. When I began teaching, about twenty years ago, I recall that fashions in dress were distinctly different from those of to-day. Among my first students I shall always remember a gentlemanly and well-dressed youth with short jacket-coat, peg-top trousers, "Smokomis" shoes—advertised by a prominent dealer as "the ugliest shoes in town"—red socks, brilliant red tie, and a dinky little cap, the forerunner of the freshman cap of to-day; that was the fashion of those days; it served its purpose, as such things do, and gave place to subsequent developments that now seem equally absurd. I suppose we may say that that fashion or style died, although it seemed very much alive at the time.

As a student I used to be told of the deadness of classic architecture—it was when the Richardsonesque was very much in vogue—and, after studying Vignola and hearing sundry lectures, I agreed that it was very dead indeed—the lectures as well as the architecture. I remember I did have a slight doubt upon visiting the Columbian Exposition, but soon after graduation I spent several years in Chicago offices where the influence of Louis Sullivan was strong and I became fully convinced that all bygone styles were dead.

Subsequent reading and European travel awakened new doubts, and I determined to get to the root of the matter. I recall most vividly a visit to the Acropolis Museum at Athens when the vitality of Greek art asserted itself with startling effect. Among the crude but promising architectural forms were the weird pediment sculptures, the typhons with staring eyes and twisted tails and colors hardly subdued with the passage of time. And coming out, the Parthenon stood, every line vibrating with life, the incarnation of eternal youth. From that day I have never been able to think of classic art as dead.

Mediæval architecture protested with a thousand tongues that it was not dead and could not die so long as a scrap of carved stone or stained glass remained to bear witness to its greatness. You who have wandered among the cathedrals of France need not to be told this.

Then I thought it must be the very ancient styles that were dead, the Assyrian and the Egyptian. In a nightmare, after a day spent in the British Museum, I felt one of the great winged bulls standing on my chest, while Shalmaneser and his warriors marched past with majestic tread, rampant lions roared, and lean leopards leered from the blackness of the night, just as I had seen them on the wall-slabs from the palaces, in the museum, and another misconception was removed.

I have as yet been unable to visit Egypt, but the photographs my friends bring back and the exhibits we have in our museums convince me that the architecture of Hatshepsut's temple, and the sculptures and paintings in the Valley of the Kings are not works of a dead style.

Where, then, are the dead styles? I firmly believe there are none. When spiritual and material forces culminate in the production of a style of art the result is very different from a passing fashion that dies and is forgotten. That these living styles of bygone ages are applicable to our present-day problems is another matter. They serve us best by way of inspiration, encouraging us to great effort, but keeping us humble by exhibiting seemingly unapproachable achievements.

New Bergen Branch Library Building, Jersey City, N. J.

THE competition for the selection of an architect for the new Bergen Branch Library closed August 16. The competition was strictly anonymous and was open to any architect desiring to compete. The rules provided that all drawings should be of uniform size and scale and without identification marks, the names of the architects submitting plans to be in sealed envelopes without superscription. According to the terms of the competition the five best plans submitted were to receive an award of $250 each. The best one of these five was to be selected as the plan for the new building and its author to be appointed the architect. The award of $250 in the case of the competitor appointed as architect for the building was to be accounted as a first installment of his regular commission.

Thirty-two plans were submitted. The plans were then carefully examined by the trustees and the librarian, and, in accordance with the rules, the trustees selected the five best plans to receive the award of $250 each. From these five No. 29, by Arthur Frederick Adams, of Chicago, was unanimously chosen as the design and plan for the new building.

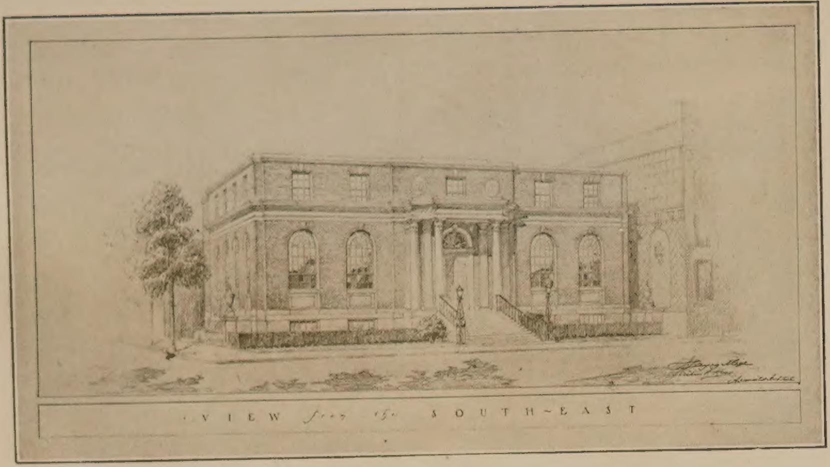
Mr. Adams is a prominent architect with fifteen years' practical experience in New York and Chicago. He is a graduate of the College of Architecture, Columbia University, the winner of the Paris Prize scholarship, and studied for three years at the Ecole des Beaux Arts, Paris. He took an active part in the design and construction of the New York Public Library, several of the branch libraries in Brooklyn and New York, and was the architect for a number of public and university libraries in the West.

The new building will be erected on the corner of Bergen and Clinton Avenues. It will have a frontage of 85 feet on Bergen Avenue and will be about 70 feet in depth. It will have two stories and a basement. The building will be of fireproof construction throughout. The exterior will be of brick, terra-cotta, and granite—granite to be used from ground level to line of first floor; the remainder of the building to be of brick trimmed with terra-cotta.

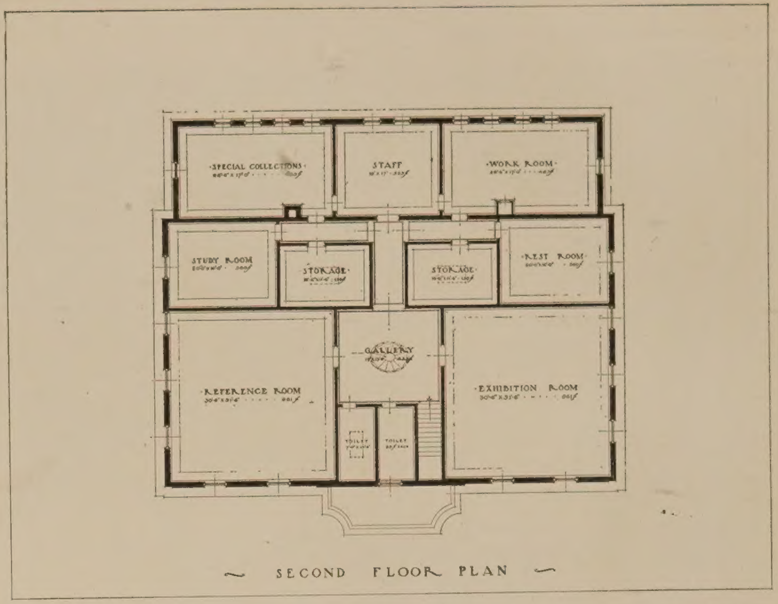
The new building will contain all the rooms and departments necessary for a modern, well-equipped library; and in addition will have an auditorium with nearly 500 seats in the basement and a large exhibition-room on the second floor.

The authors of the other four plans selected to receive the award of $250 are as follows:

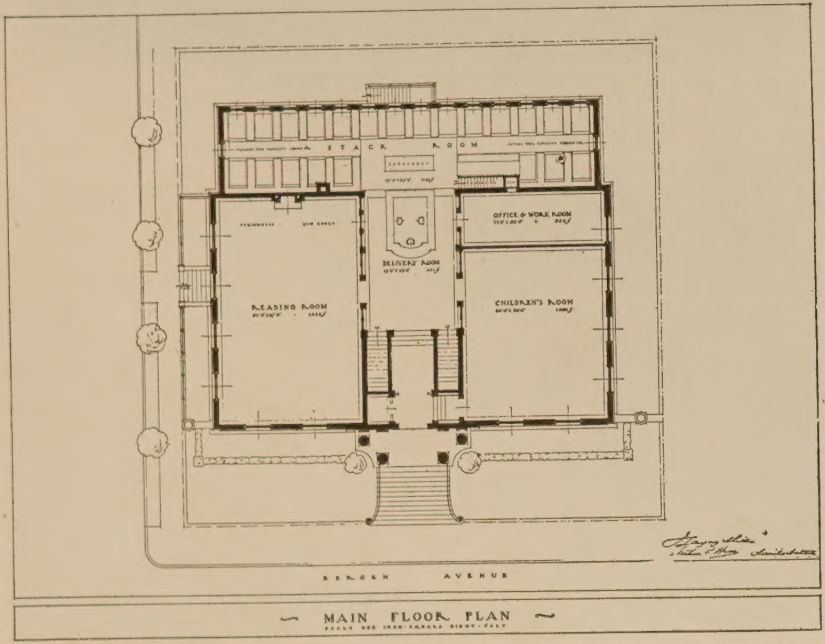
Hindenach & Spangenberg, Boston, Mass. J. L. Mills & A. P. Hess, New York. Albert M. Kreider, Boston, Mass. Coffin & Coffin, New York.



~ VIEW from the SOUTH-EAST ~

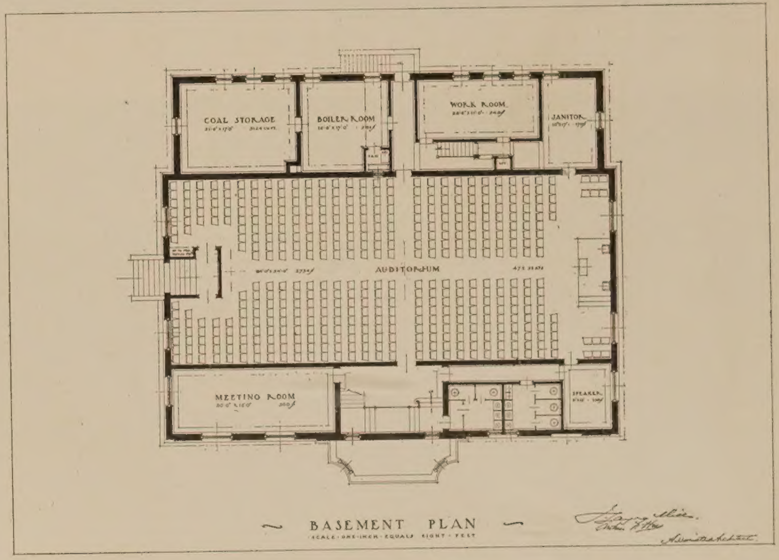


~ SECOND FLOOR PLAN ~



~ MAIN FLOOR PLAN ~

SCALE ONE INCH EQUALS EIGHT FEET

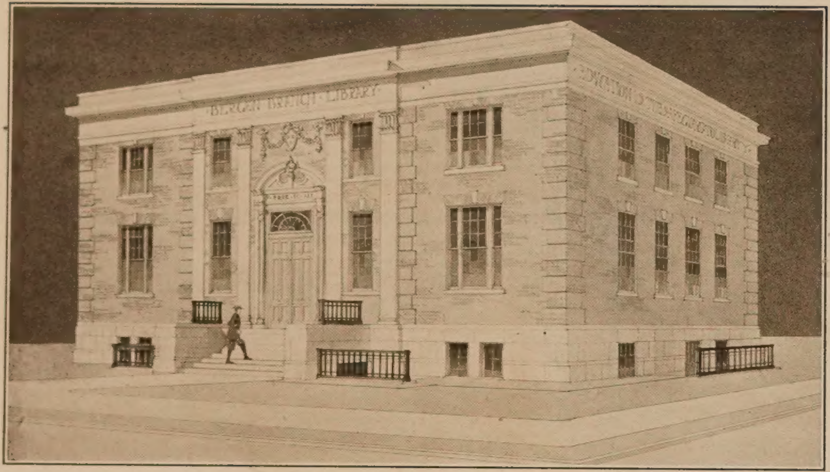


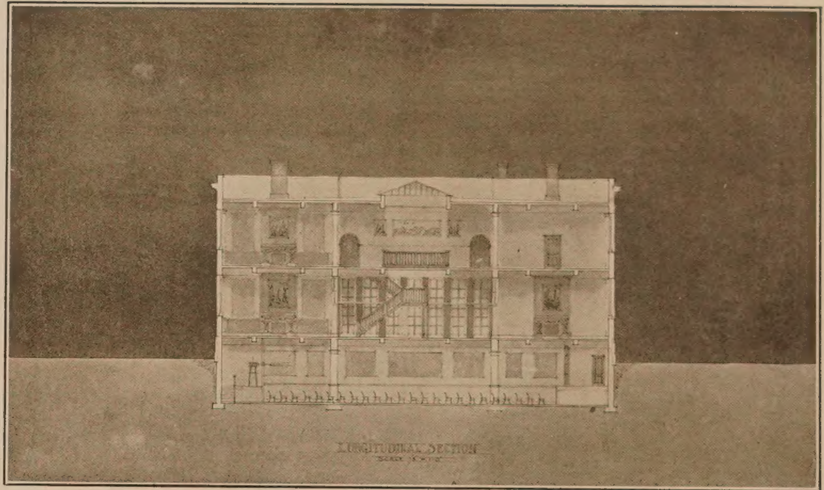
~ BASEMENT PLAN ~

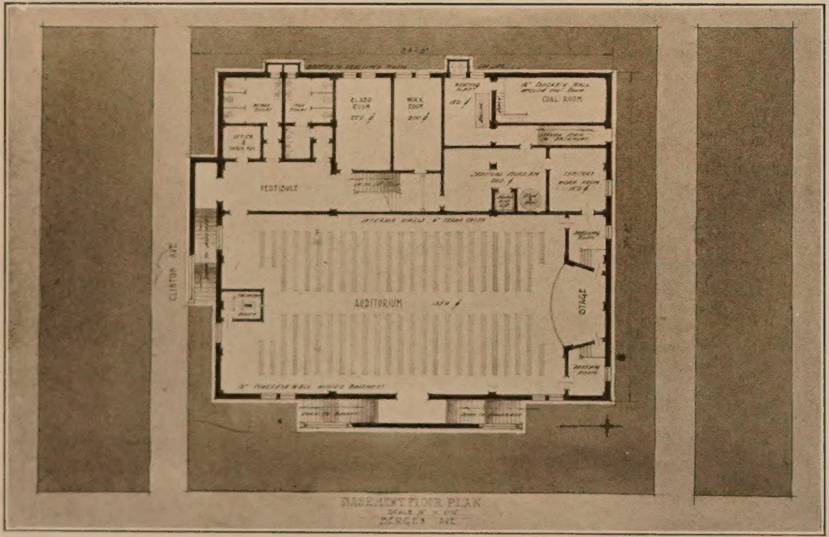
SCALE ONE INCH EQUALS EIGHT FEET

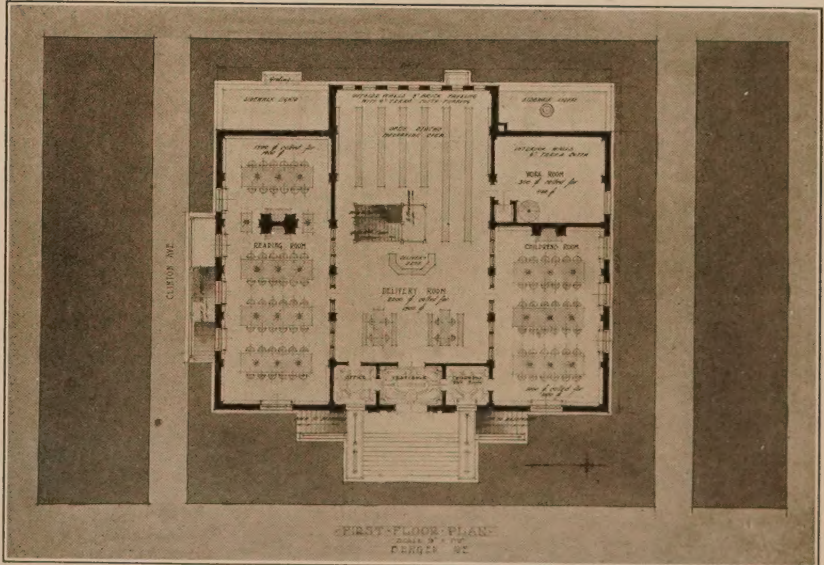
DESIGN No. 8. NEW BERGEN BRANCH LIBRARY BUILDING, JERSEY CITY, N. J.

J. L. Mills and A. P. Hess, Architects.



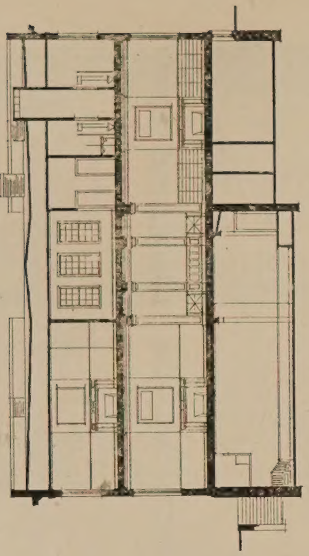




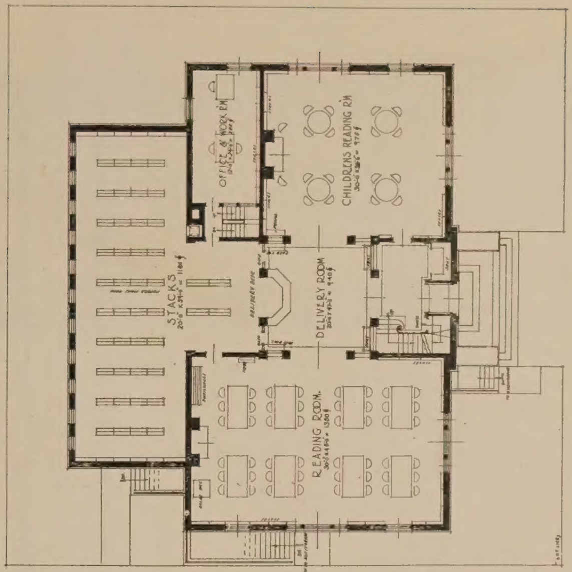


DESIGN No. 14. NEW BERGEN BRANCH LIBRARY BUILDING, JERSEY CITY, N. J.

Hindenach & Spangenberg, Architects.



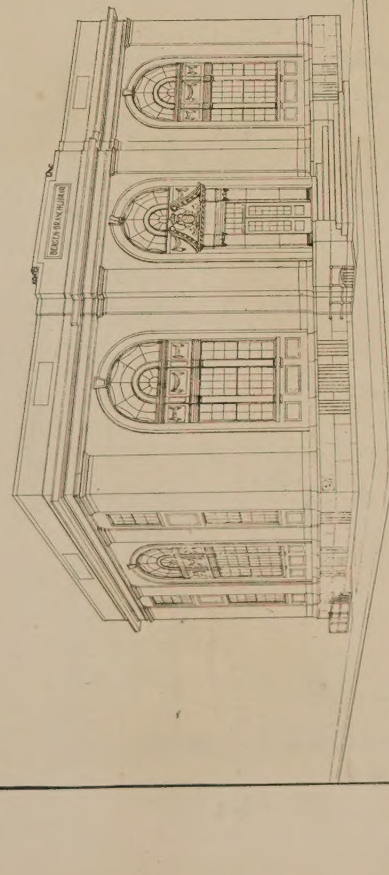
LONGITUDINAL SECTION

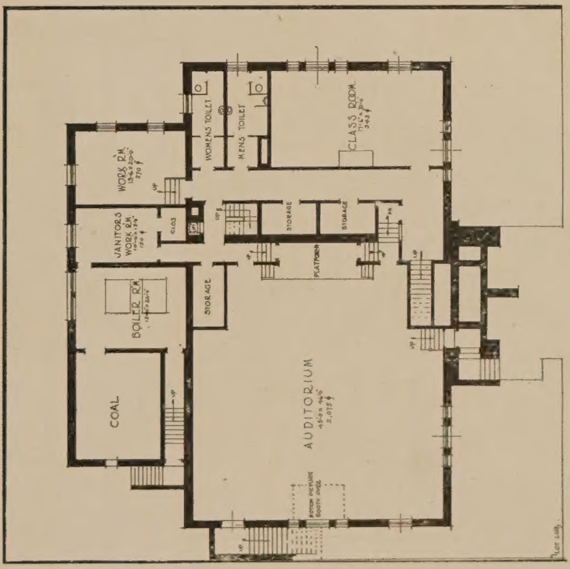


FIRST FLOOR PLAN

3
48/1330

FREE PUBLIC LIBRARY. BERGEN BRANCH

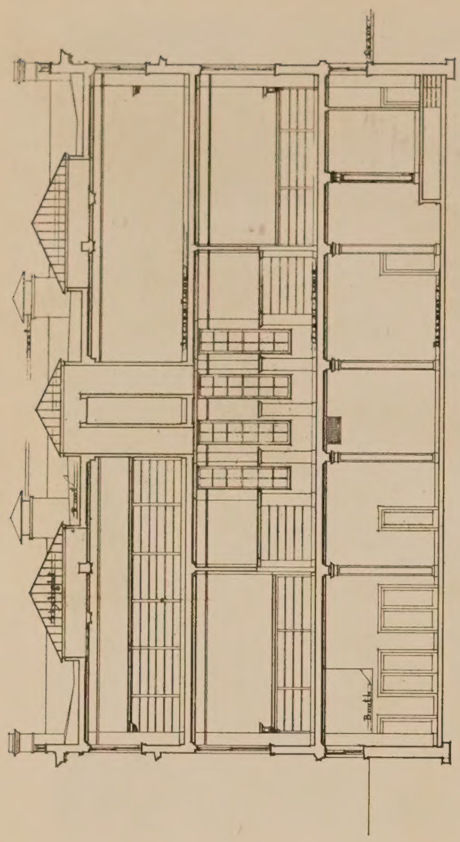


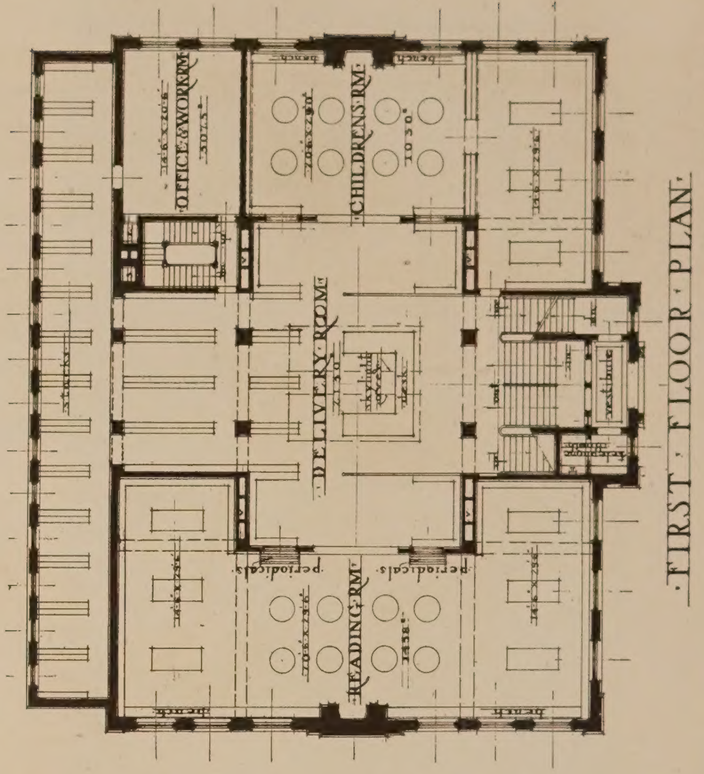


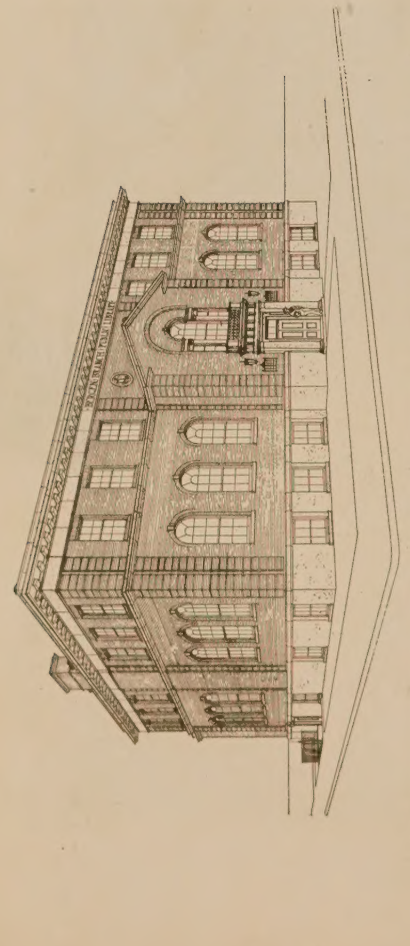
BASEMENT PLAN

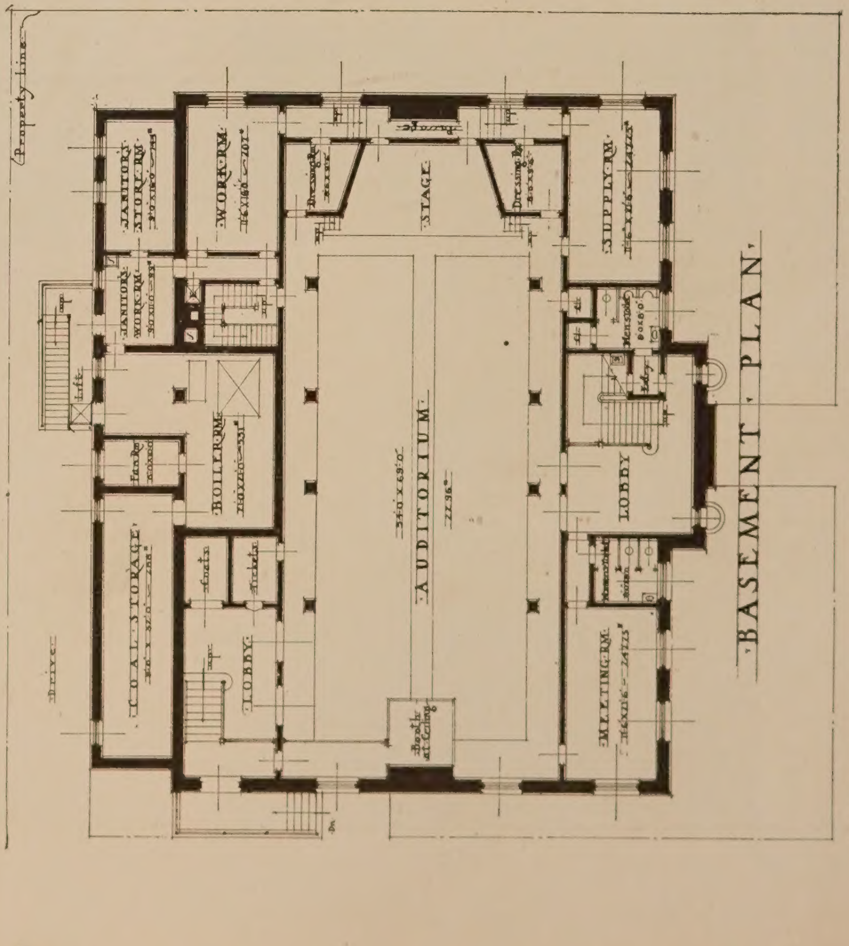
DESIGN No. 11. NEW BERGEN BRANCH LIBRARY BUILDING, JERSEY CITY, N. J.

Albert M. Kreider, Architect.









DESIGN No. 7. NEW BERGEN BRANCH LIBRARY BUILDING, JERSEY CITY, N. J.

Coffin & Coffin, Architects.

Editorial and Other Comment

1921

THERE is always something of an affront to the average intelligence in hearing some incorrigible optimist iterate and reiterate his everlasting slogan of "keep smiling, good times are coming, the worst is over," and yet if we all sit tight in our own little corners of discontent and discouragement, it would be a still worse world. The trouble with the incorrigible optimist is too often simply the fact that he has found the sledding rather better than he expected and his problems thereby made easier.

The real optimist is the man who has had his soul tried, and can yet pull himself together and make ready with a foundation of clear thinking and acceptance of facts for the fight ahead.

He knows all about what has been, where and why he has failed, and knowing, he sets out to put his hard experience to better use.

We have certainly had a surfeit of revelations concerning rottenness and graft in the building trades, and the trail of the profiteer has been blazed so plainly that even the blind may follow. During the war the government put a stop to general building; "since the war a general chaos has followed. Blame it on George," for there doesn't seem to be any way of definitely placing the responsibility on any one group of persons or conditions.

We all know that times have been difficult for architects, and we all hope the times are surely going to be better. Thousands of homes *must* be built, thousands of factories and office-buildings, and they are going to be built, and the architects are going to build most of them. There are signs of better times, even if they are not yet lighted by electricity for all to see. The problem of readjustment must and can be solved—not in a day, a month, a year, but it will be solved, and somehow we believe there is going to be a new light in the land that will point the way to a better understanding between capital and labor and a fairer adjustment of prices between buyer and seller. Optimist? No! Here is the answer: If we can't do business under present conditions, and business must be done, then a better way will be found for doing it!

The air has been considerably cleared by recent exposures of graft, iniquitous combinations, and unconscionable profiteering. We know better "where we are at," and knowing, we may act accordingly.

Six Per Cent

WE have been in the habit for so long of thinking of the architect in general as an honorable and fair-minded gentleman that it rather grieves and pains us, not to say amuses us, to hear him referred to as a profiteer on a six-per-cent basis! We confess we had never thought the six per cent which is allowed by the institute exorbitant, in fact we had always thought it very modest, even modest to the point of being inadequate. We cannot think at the moment of any other profession that is so modestly paid, considering the education, training, and the responsibilities involved, and we only wish that more business could be conducted on the same basis of integrity and honor that we know to govern most members of the architectural profession. What we need, what the public needs, is a better understanding of the true place of the architect in the world of business. It is to him that we must look for a better way to solve the housing problems, the problems of construction, not only with a view to economy and suitableness, but with an eye to beauty and good taste. It is only the unseeing and unknowing who fail to recognize that practically all the achievements of the world have been made by men whose integrity of purpose and practical ends have been combined with an element of imagination.

It is often the so-called practical man who misses the real achievement by his very lack of vision. Almost any man may be a bricklayer of a sort, but to pile them up with a semblance of beauty and assurance of stability calls for something we call art. All of which is to say that the architect is worthy of his hire.

The Decoration of Schools

A RECENT correspondent asked us to give him a list of public schools that had been decorated with mural paintings. There are not so very many of them, so far as we were able to discover, and we wish that there might be more. In some instances murals have been given to a local school very much as silver service is given to a newly launched ship. It has been a matter of local pride and interest in some particular local historical subject.

There are in every school locality admirable subjects for murals of interest to the community and of value in developing a sense of pride in the pupils as well as giving them pictorial glimpses of some inspiring familiar historical or romantic legend. What fine subjects might be found in these days in the beginnings of our history, in the records of the pioneers, in the lives of men whose patriotism rose above self and party, in the splendid record of our men in the last and greatest of all wars.

If we are to Americanize the millions of foreign born, make their children feel that America is their home, we must surround them with things that speak for and tell of America. A pictured story, made with the lure of color, is worth whole libraries of text-books of dry paragraphs of history. Even tolerable murals would be better than none. We see many of our schools decorated with framed pictures of classic times, and some of us think that we dwell too much on the academic past. Our children of to-day need the inspiration of America much more than that of Greece and Rome. "No art is better than bad art," many will say, but we are inclined to think that even the story-telling murals that are frankly pictorial may have their value. Just when a picture is a mural and when it is not has been often discussed, and opinions will differ as much as the work of the painters.

On the Use of the Orders

WE take pleasure in calling attention to the series of three or four articles by Mr. Swartwout that begin in this number. Readers of ARCHITECTURE will recall a former series by the same author on "The Classic Orders in Architecture." In the new series Mr. Swartwout deals with the orders in their application to modern buildings. We believe that what he says will be of interest and real practical value in helping to point the way to a more intelligent and consistent dealing with classic details in buildings of to-day. There is a jumble of unmeaning and incongruous stuff foisted upon an unsuspecting public in the name of classic, and some of our modern temples of business stand out among the chief offenders.

Lectures at the Metropolitan Museum of Art

WE need not tell the readers of ARCHITECTURE of the immense practical value of the museum's wonderful collections and of the generous way it makes them available for students in all the arts. The following lectures are of especial interest to our readers:

SATURDAY SERIES

Jan. 22—"Dutch Landscape Painters XVII Century," Adriaan J. Barnouw, Professor, Columbia University; 4 P. M.

SUNDAY SERIES

Jan. 9—"Early New England Architecture," Henry A. Frost, School of Architecture, Harvard University; 4 P. M. Jan. 16—"English Country Houses," Eliza J. Newkirk, Wellesley College; 4 P. M. Jan. 23—"French Gardens of the Renaissance," Bremer W. Pond, School of Landscape Architecture, Harvard University; 4 P. M. Feb. 27—"Art in Oriental Rugs," Arthur U. Dilley, Lecturer; 4. P. M. March 13—"Decorative Ironwork," Samuel Yellin, Craftsman; 4 P. M.

To Own Your Own Home

HENRY K. HOLSMAN, Architectural Adviser of the "Own Your Home" Exposition to be held in Chicago, says:

"The way to resume building is to build. If for a brief time the banks, in their race for 'all they can get,' overlook the value of the building industry, let the building interests get together and devise other and possibly safer financial plans. The little savings of individuals put together make great ownerships. If those savings, gathered by the banks, are diverted to consumable and speculative investments for the time being, let the building industry, without waiting for the banks to disgorge, institute a strong teamwork drive for individual initiative in building ownerships, gather what individual capital is left here and there, organize co-operative ownerships and go ahead. It is the golden opportunity for the building and construction industry to save the nation's welfare and thus save itself."

A Seventeenth-Century New England Frame House

ONE of the best preserved houses of the earlier colonial period in New England is the "Parson Capen House," in Topsfield, Mass., built in 1683 by the Rev. Joseph Capen and described in the latest bulletin of the Society for the Preservation of New England Antiquities. The house is now owned by the local historical society and was carefully restored in 1913 by its secretary. This house was well built, even for its day, and it possesses architectural embellishments unknown in other existing dwellings of that period. The second story widely overhangs the first in front, the garret floors project at either end, and all are supported by ornamental wooden brackets. The overhang is a form of timber construction common in old English work and seems to have been done solely for its architectural effect. Beside the front door and under the gables are brackets that help to support the overhang.

The framework of these houses was usually of oak, though sometimes of pine, and made of heavy timbers mortised and tenoned together and held in place by wooden pins. Their joints were hewn with much skill by men who worked as their mediæval forefathers had done. The foundation timbers rested on an underpinning of field stones, laid without mortar.

The timbers of the framing in the Parson Capen House are of course very old, and the original newel and turned balusters of oak are still in place. Much of the interior woodwork, however, and all of the shingles and clapboards are restored. This restoration serves to show how the houses of the early period looked when fresh from the hands of the builders. Under the northern ends of the "summer beams"—which is one of the curious features in the Parson Capen House—being girts spanning the rooms, is incised with a chisel the date, July ye 8th, 1683, so that the exact date when the "frame" was raised is known.

Book Reviews

MEMOIRS OF THE AMERICAN ACADEMY IN ROME. Vol. III. New York University Association, 280 Madison Avenue, New York. Board covers.

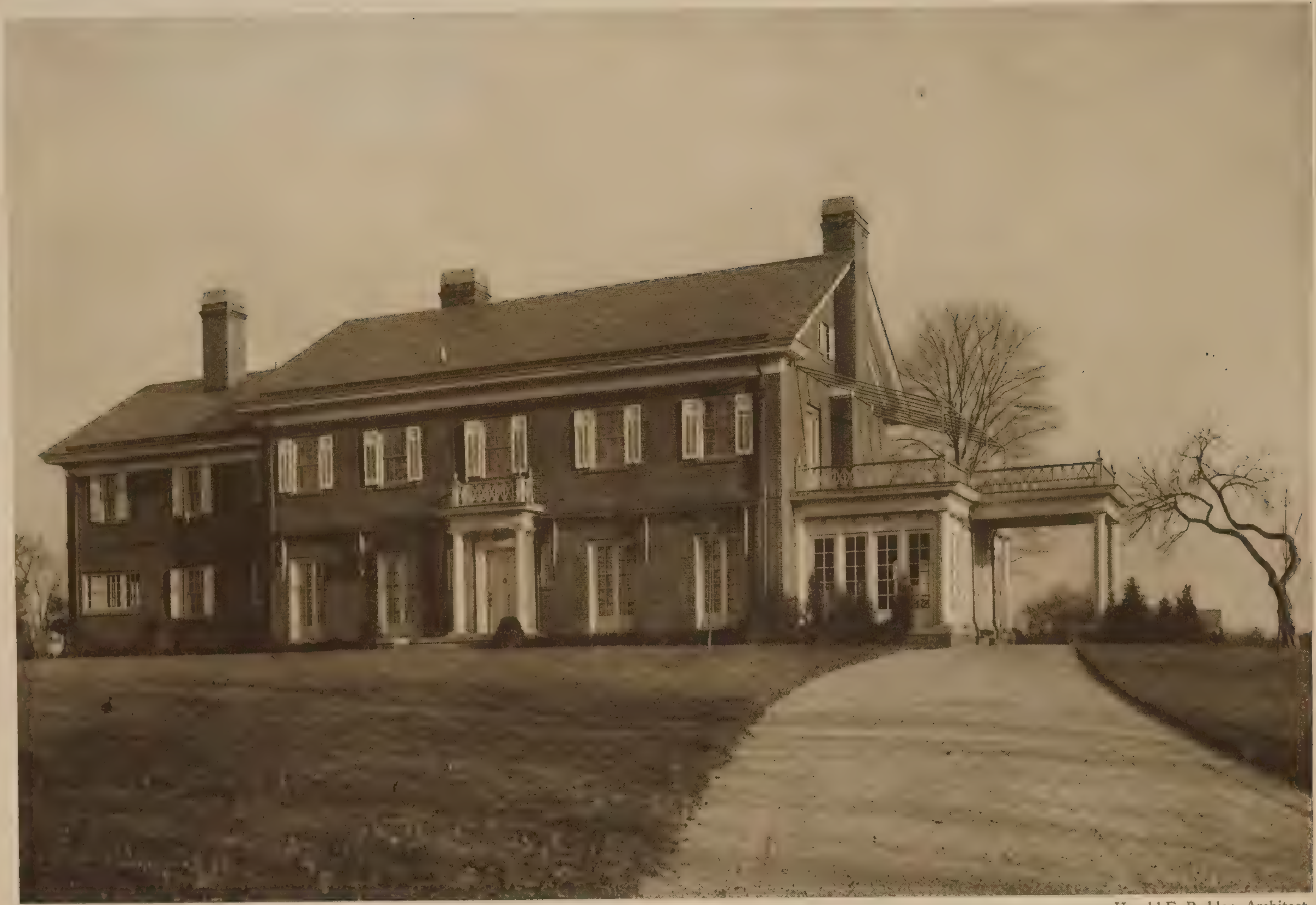
One cannot help noting at once in looking at this handsome volume that it is printed for the American Academy in Rome by the "Istitutó Italiano Di Arti Graffiche-Bergamo." Type, paper, and plates are worthy of the subjects the volume includes: "The Bernardino Tomb," by C. Densmore Curtis; "Praxias," by E. Douglas Van Buren; "The Work of the School of Fine Arts." The Bernardino Tomb was discovered in the year 1876 at Palestrina, and derives its name from the Bernardino Brothers, who furnished the money for the excavation.

The text includes a descriptive catalogue of the many objects in gold, silver, bronze, and other metals that have been discovered. Praxias was the sculptor of the earliest figures made for the temple at Delphi, and was at work in the first half of the fourth century B. C.

The work of the School of Fine Arts shown includes architecture, sculpture, painting, landscape architecture. The object of the School of Fine Arts is "to discover the best available material among America's young artists, and to bring together a group of talented young men in quiet, attractive surroundings with the *chefs d'œuvre* of the great masters as a background."

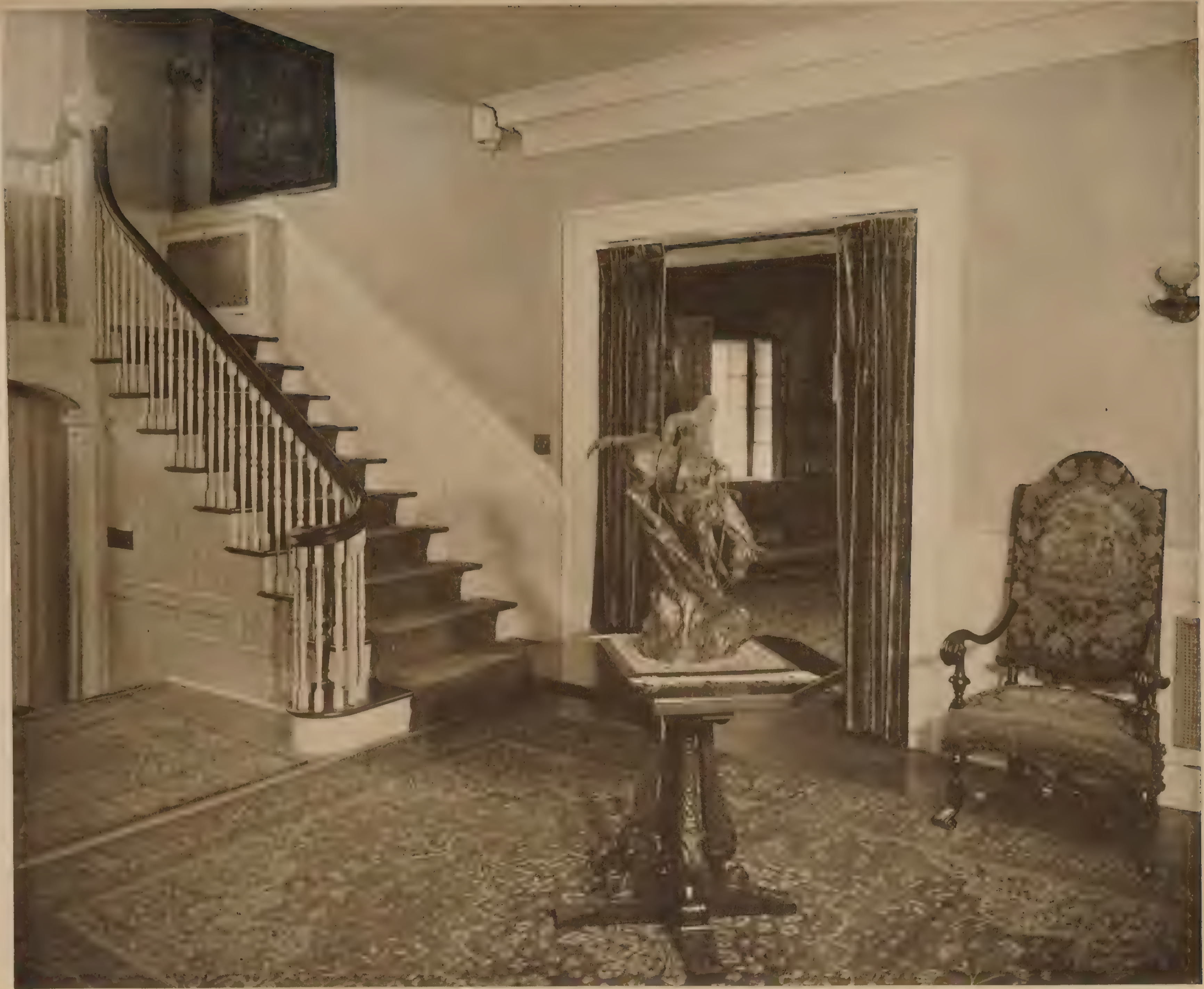
The plates include Plan of Delphi, by Richard H. Smythe, Fellow in Architecture; Women's Baths at Hadrian Villa, plan, by Raymond M. Kennedy, Fellow in Architecture; Plan of Isola Bella, by Edgar D. Williams, Fellow in Architecture; Interior of the Pantheon, by William J. Hough, Fellow in Architecture; Villa Lante, by Philip T. Shutze, Fellow in Architecture; Entrance Gate, Villa Borghese, by Edward G. Lawson, Fellow in Landscape Architecture; Relief, by Joseph E. Renier; Sower, by Albin Poladek; Duck Girl, by Paul H. Manship; Cupid and Gazelle, by Carl P. Jennewin, Fellow in Sculpture; Studies of Ezra Winter, Harry I. Stickroth, Eugene F. Savage, Fellows in Painting.

It is earnestly to be hoped that the Academy will be successful in raising the funds it needs for extending its scope and usefulness. It is an institution that should be supported by every one in the United States interested in the advancement of the arts.



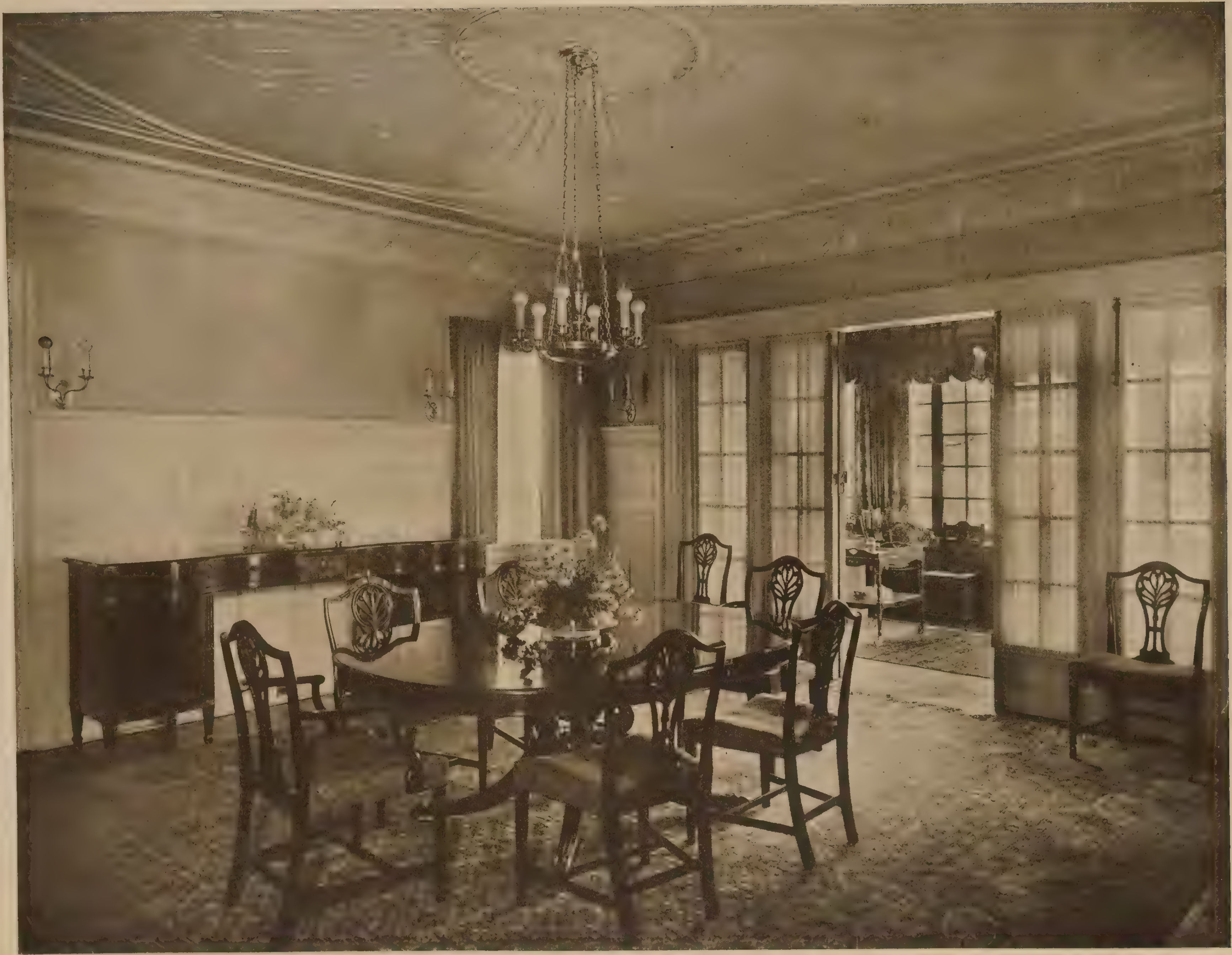
RESIDENCE, BERNARD LIPPMAN, TEANECK, N. J.

Harold E. Paddon, Architect.



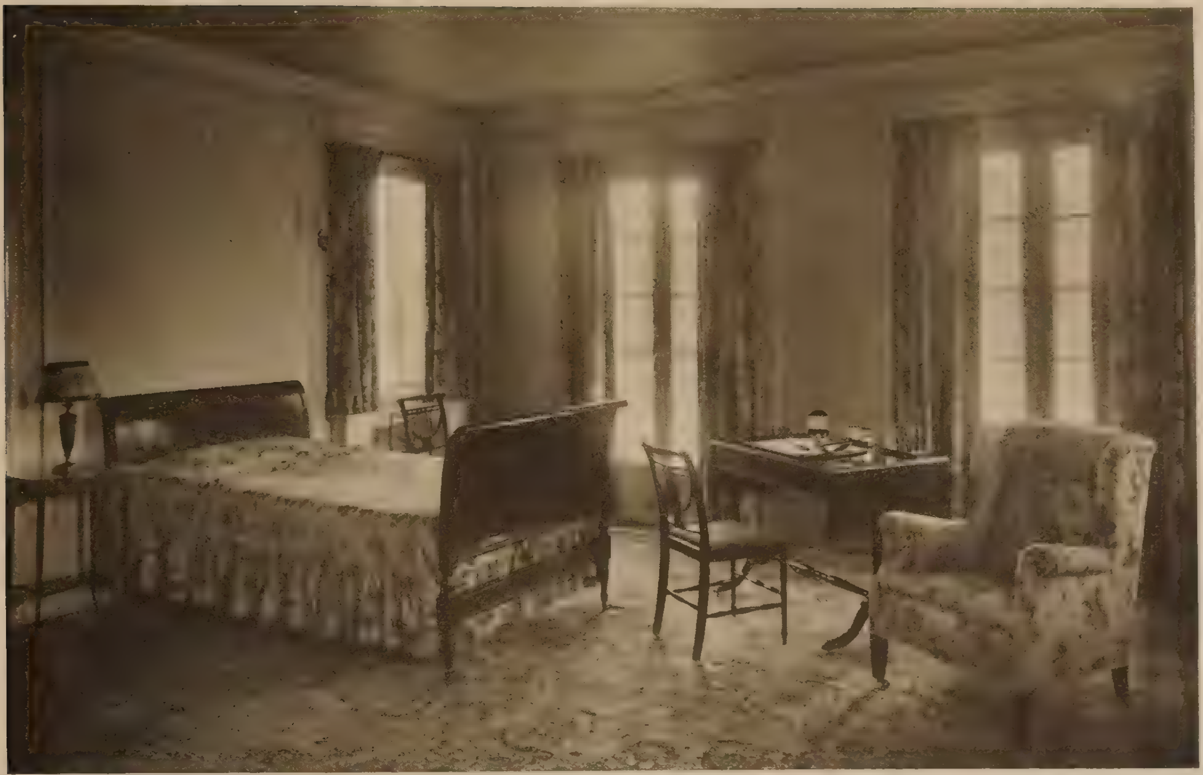
ENTRANCE HALL, RESIDENCE BERNARD LIPPMAN, TEANECK, N. J.

Harold E. Paddon, Architect.

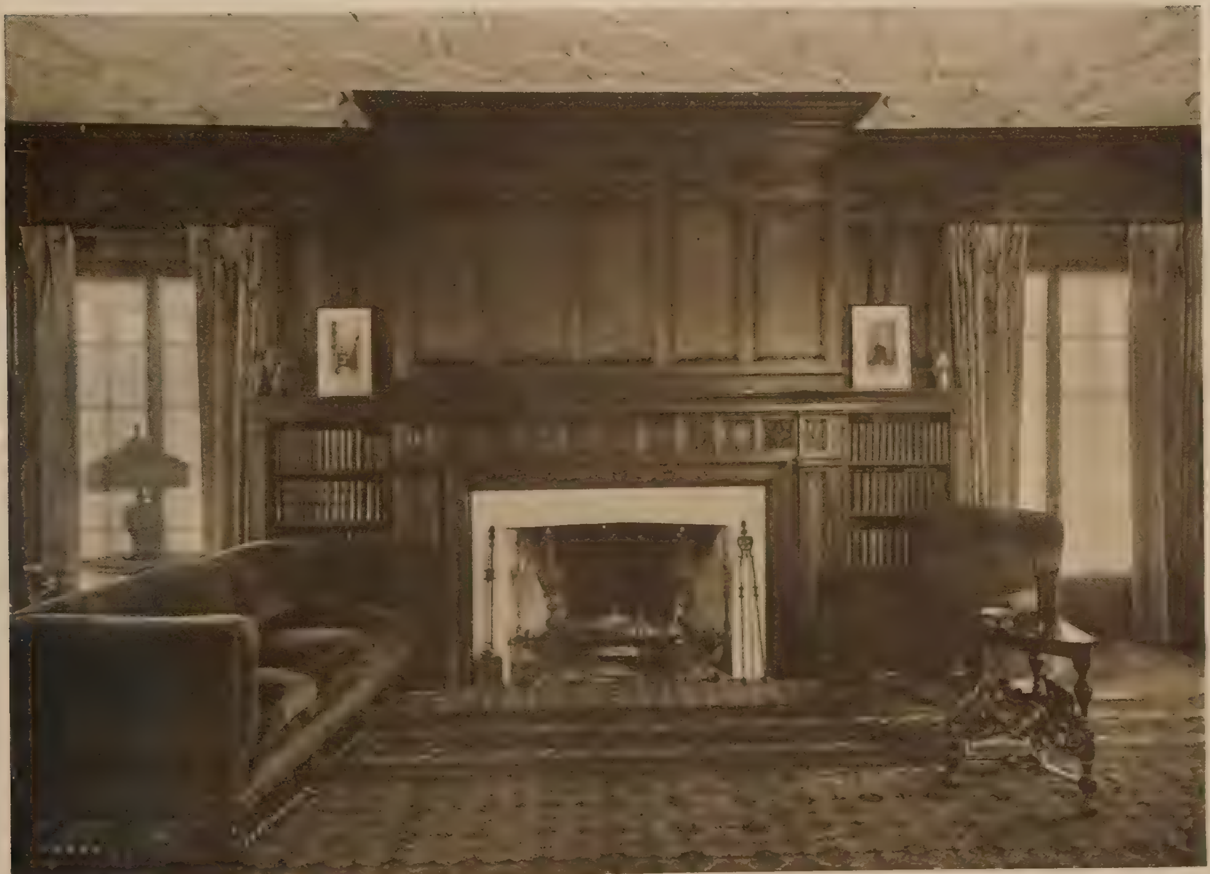


DINING-ROOM, RESIDENCE, BERNARD LIPPMAN, TEANECK, N. J.

Harold E. Paddon, Architect.



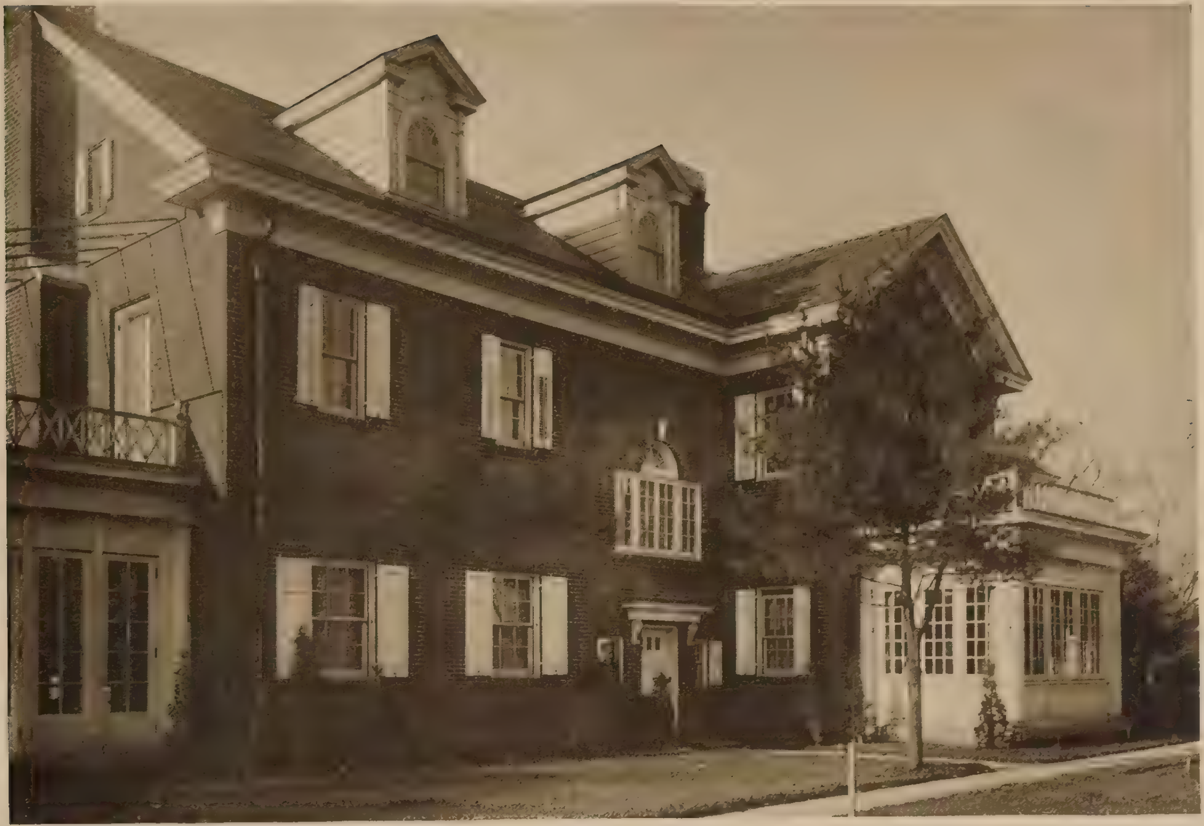
EAST CHAMBER.



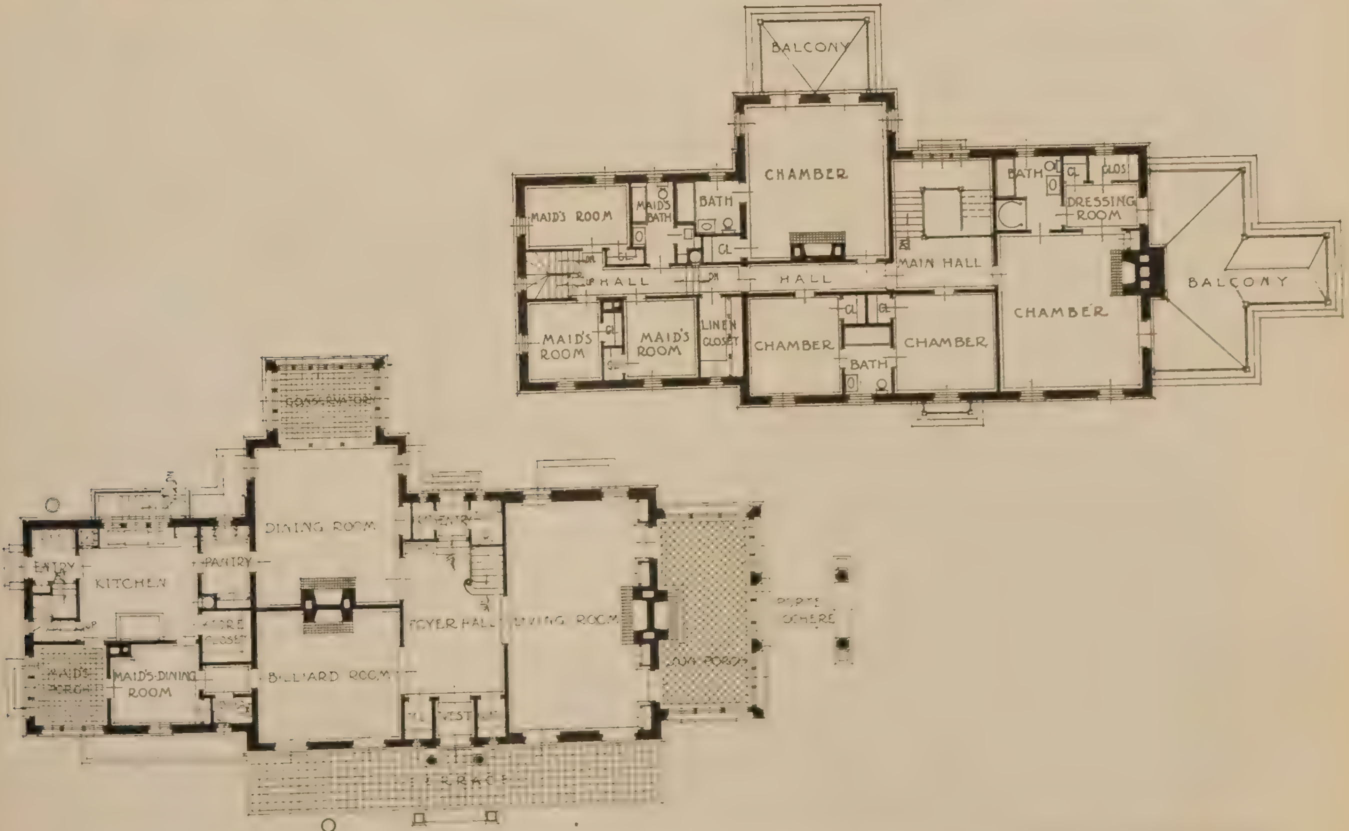
LIVING-ROOM.

Harold E. Paddon, Architect.

RESIDENCE, BERNARD LIPPMAN, TEANECK, N. J.



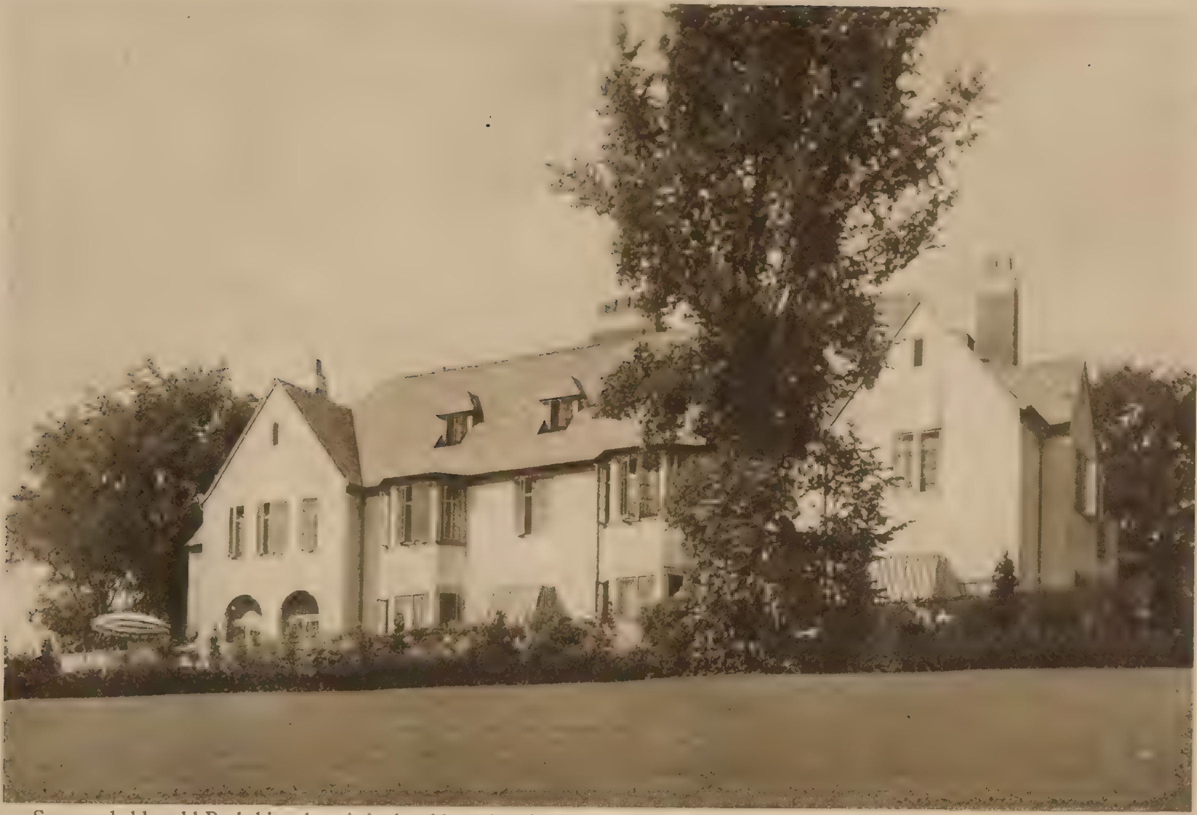
GARDEN SIDE.



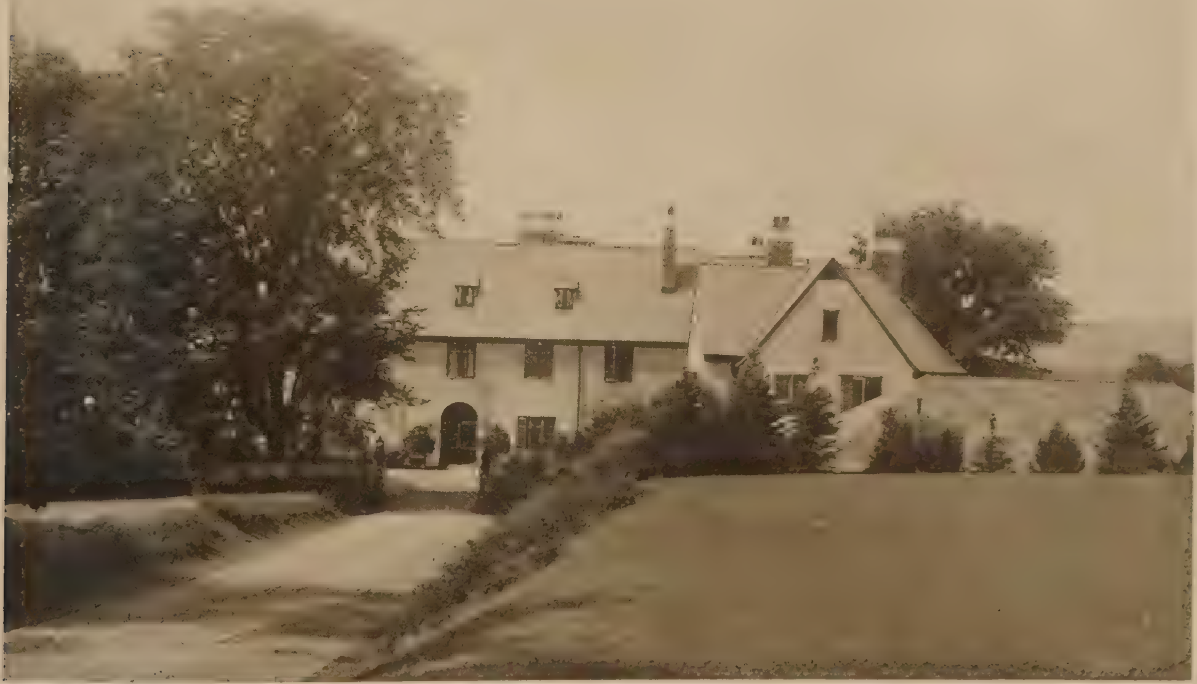
PLANS.

RESIDENCE, BERNARD LIPPMAN, TEANECK, N. J.

Harold E. Paddon, Architect.



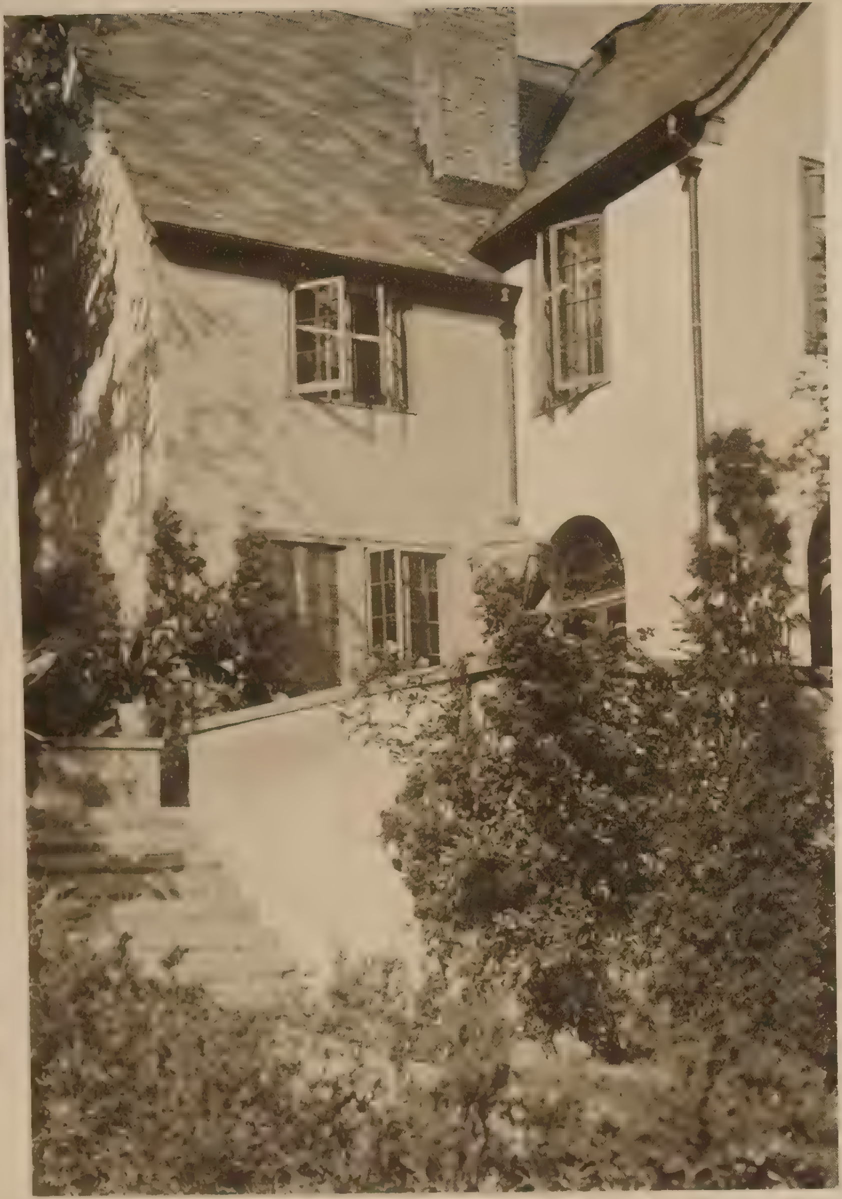
Surrounded by old Berkshire elms, it is the oldest place in the Lenox country, commanding a beautiful view from the south side.



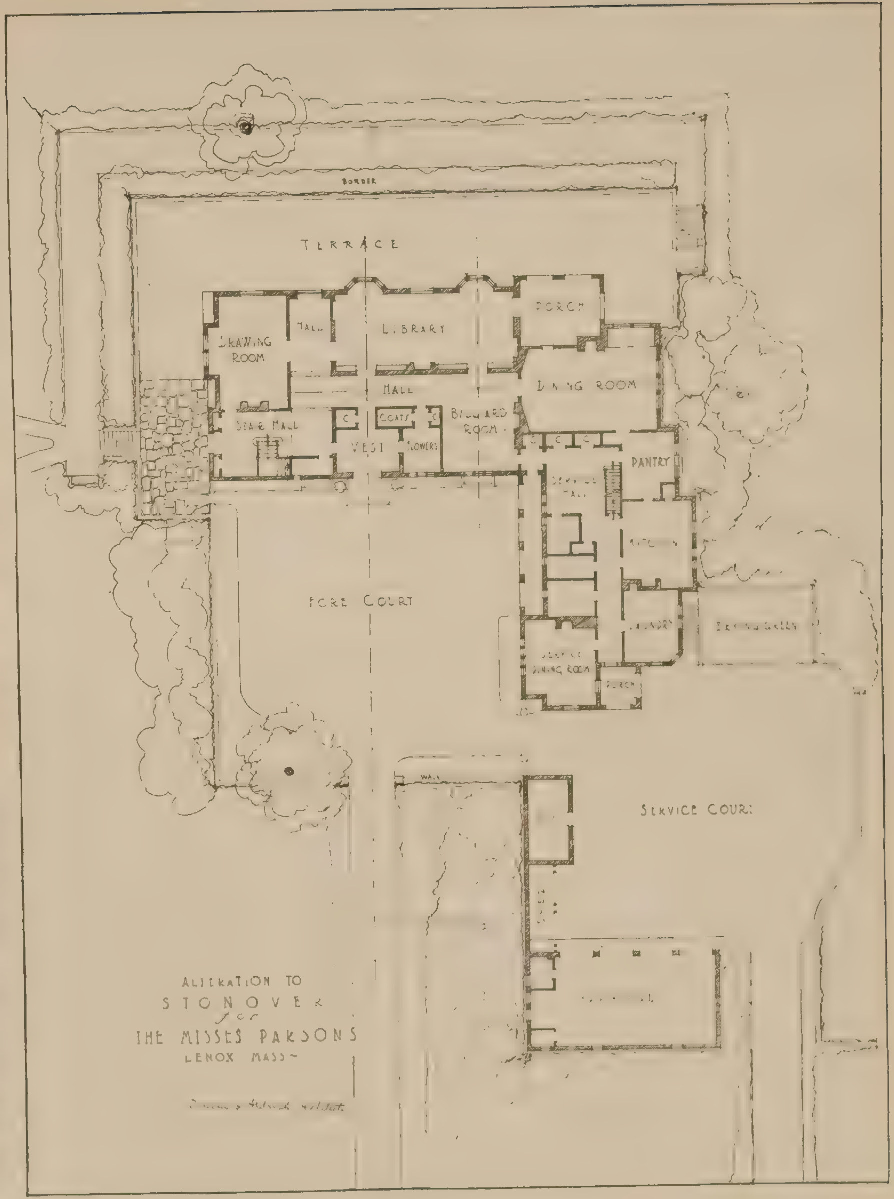
"STONOVER," RESIDENCE OF THE MISSES PARSONS, LENOX, MASS. (Alteration and Additions.)

Delano & Aldrich, Architects.

The square wooden house originally situated at the top of the hill was removed to the slope, where the site was determined by the natural placing of trees. The building was pulled apart and added to and rebuilt around old rooms for sentimental rather than structural reasons.



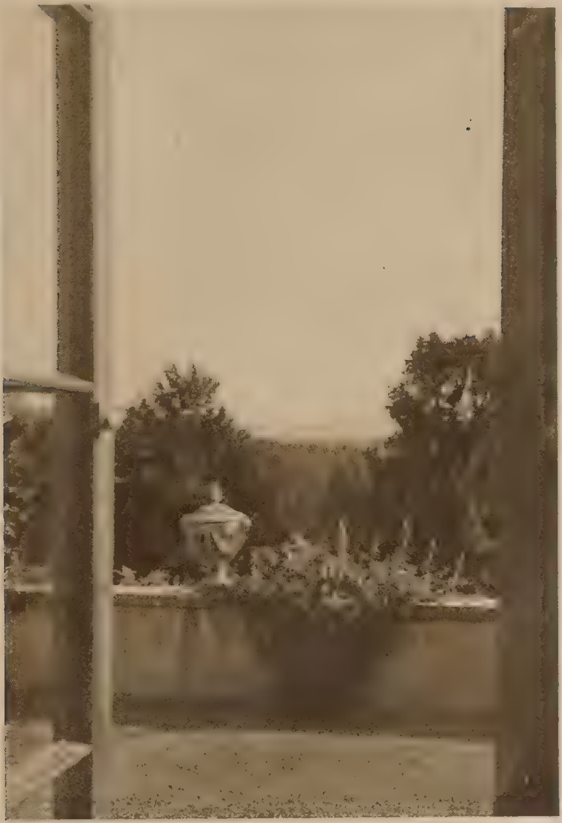
TERRACE ON THE SOUTH SIDE.



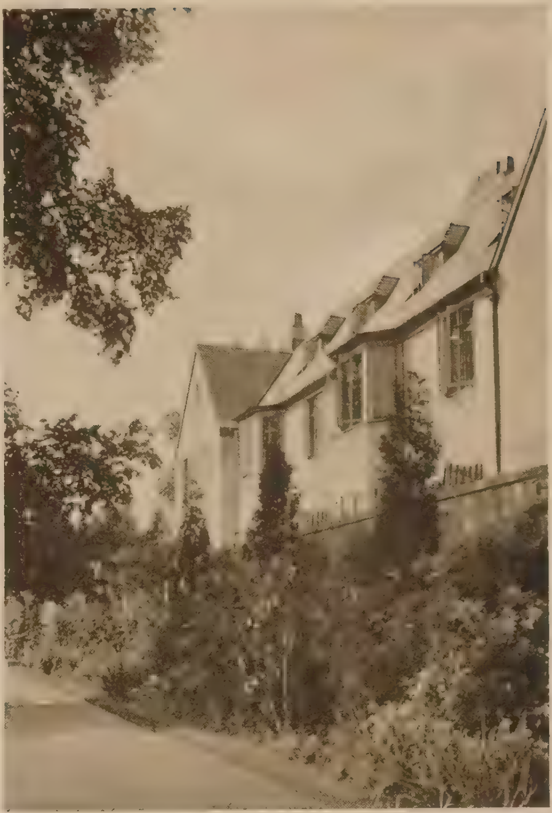
Delano & Aldrich, Architects.

"STONOVER," RESIDENCE OF THE MISSES PARSONS, LENOX, MASS. (Alteration and Additions.)

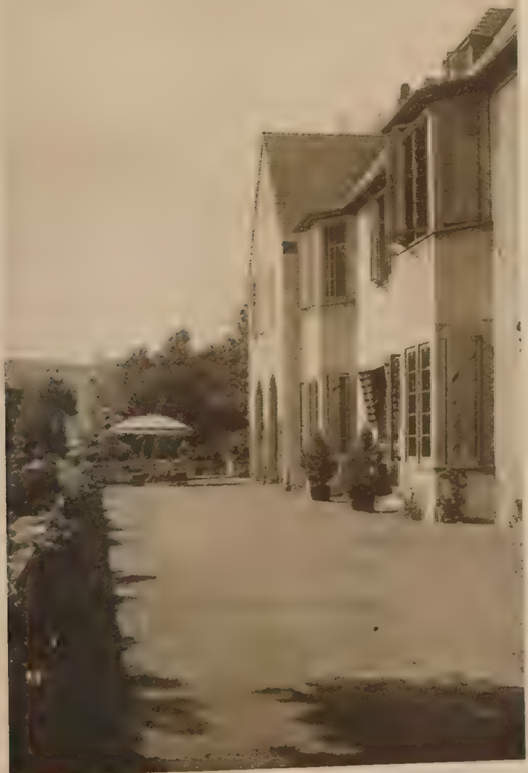
The whole south side on the ground floor is occupied by the library, finished in panelled butternut.



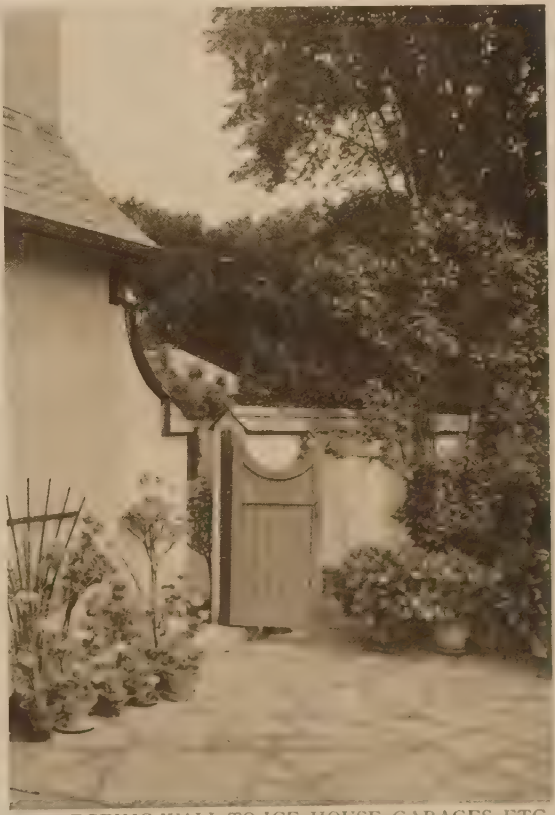
VIEW FROM TERRACE.



VIEW OF HOUSE FROM SOUTH.



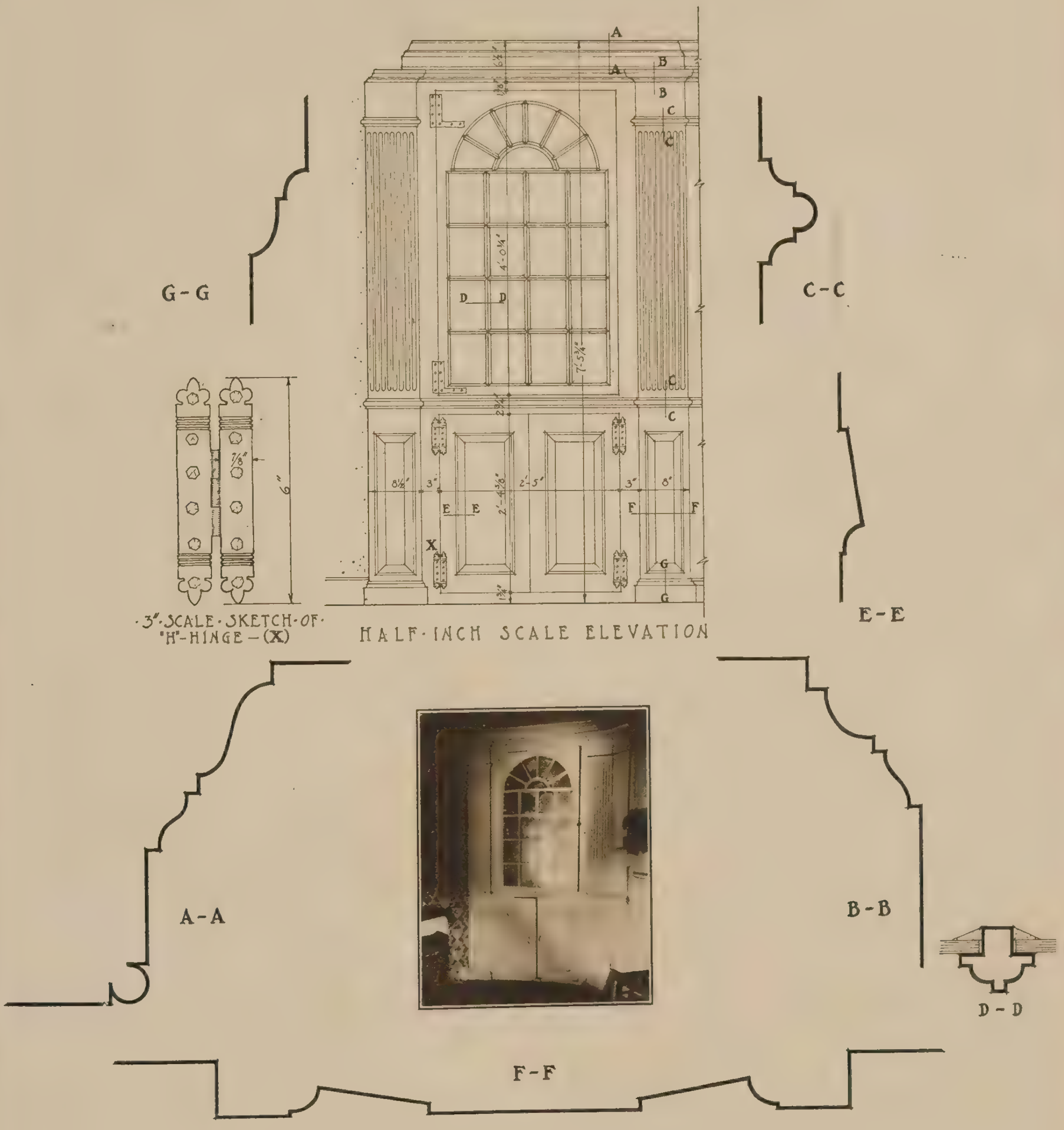
DETAIL OF SOUTH FRONT.



CONNECTING WALL TO ICE-HOUSE, GARAGES, ETC.

"STONOVER," RESIDENCE OF THE MISSES PARSONS, LENOX, MASS. Delano & Aldrich, Architects.

The house is of yellowish stucco and the woodwork is blue. The walls are of the same material as the building, with coping of variegated green and purple slates like the roof of the house.


G-G
C-C
E-E
A-A
B-B
D-D
F-F
A
B
C
D
E
F
G
X
6"
7/8"
4'-0¼"
7'-5¼"
2'-4⅜"
2'-5"
8½"
3"
8"
·3" SCALE · SKETCH · OF · "H"-HINGE — (X)
HALF · INCH SCALE ELEVATION

· ALL · MOVLDINGS · ONE · HALF · FVLL · SIZE ·

· EARLY ·
· ARCHITECTVRE ·
· OF ·
· CONNECTICVT ·

· CORNER · CVPBOARD · IN · THE · PARLOR · OF ·
· · · · THE · TAINTOR · HOVSE · · · ·
· NEAR · COLCHESTER · CONN ·

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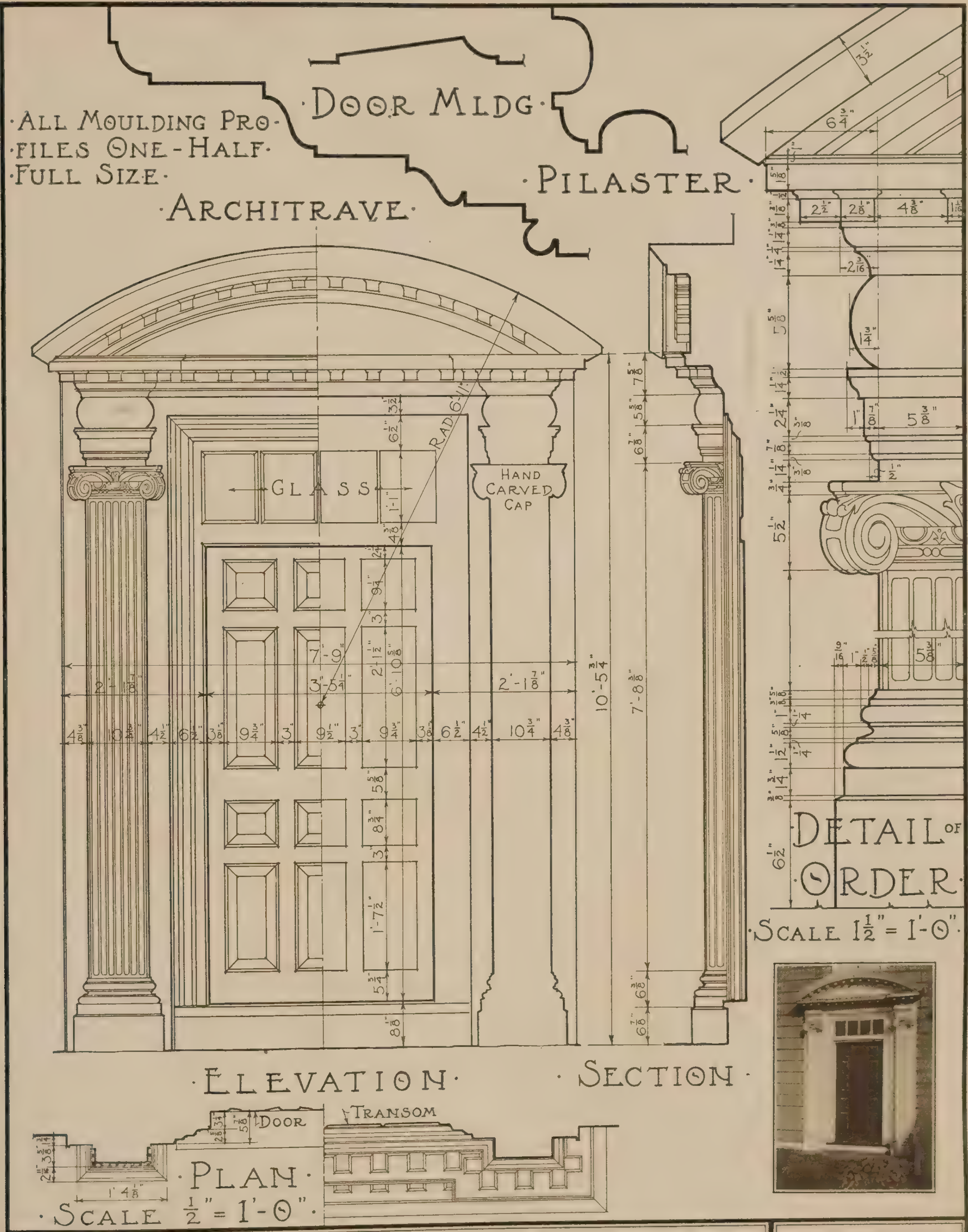
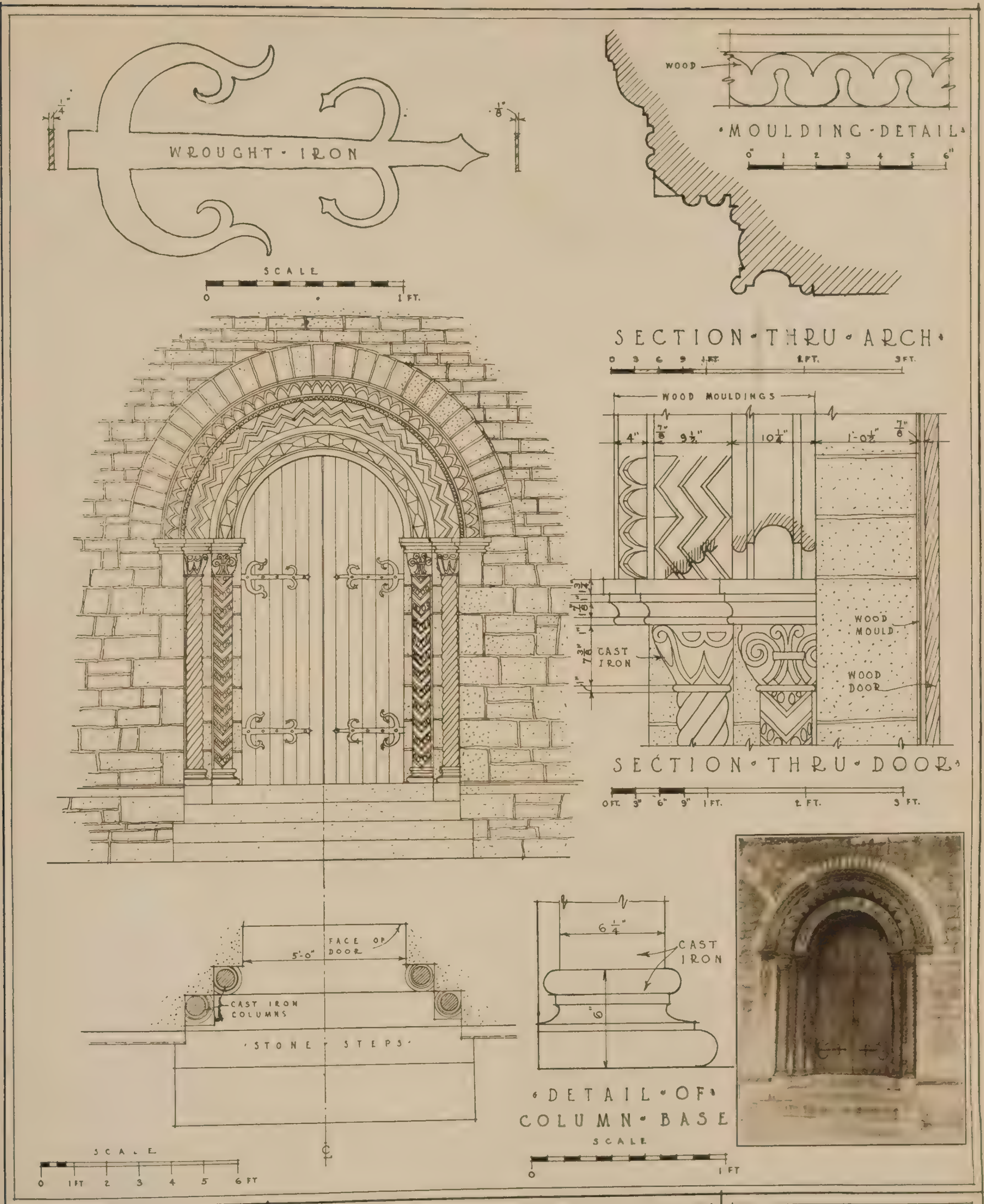
· J · FREDERICK · KELLY ·
· DRAWN · BY ·
· LORENZO · HAMILTON ·



·EARLY·
·ARCHITECTURE OF·
·MASSACHUSETTS·

·WEST DOORWAY OF ROYAL HOUSE·
·MEDFORD MASS·
·BUILT 1737-1739·

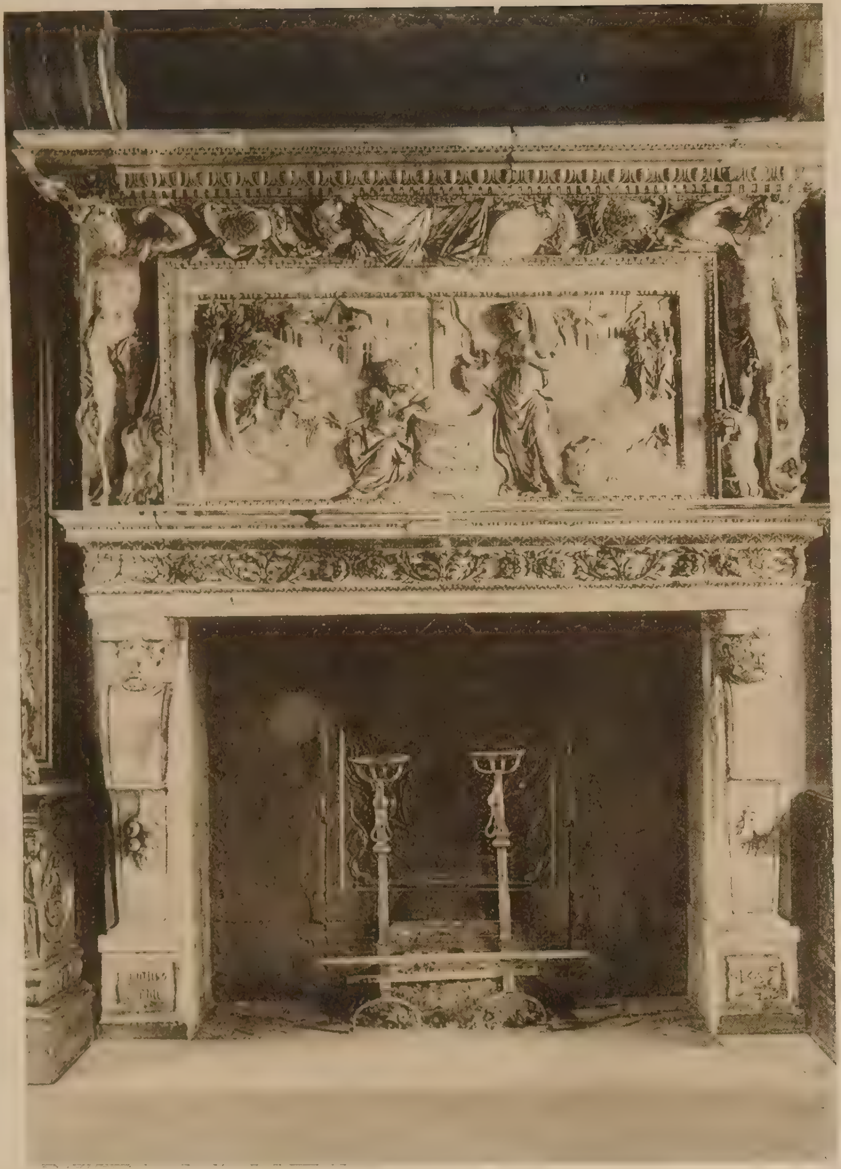
·MEASURED AND·
DRAWN BY
·GEO·R·MITCHELL·



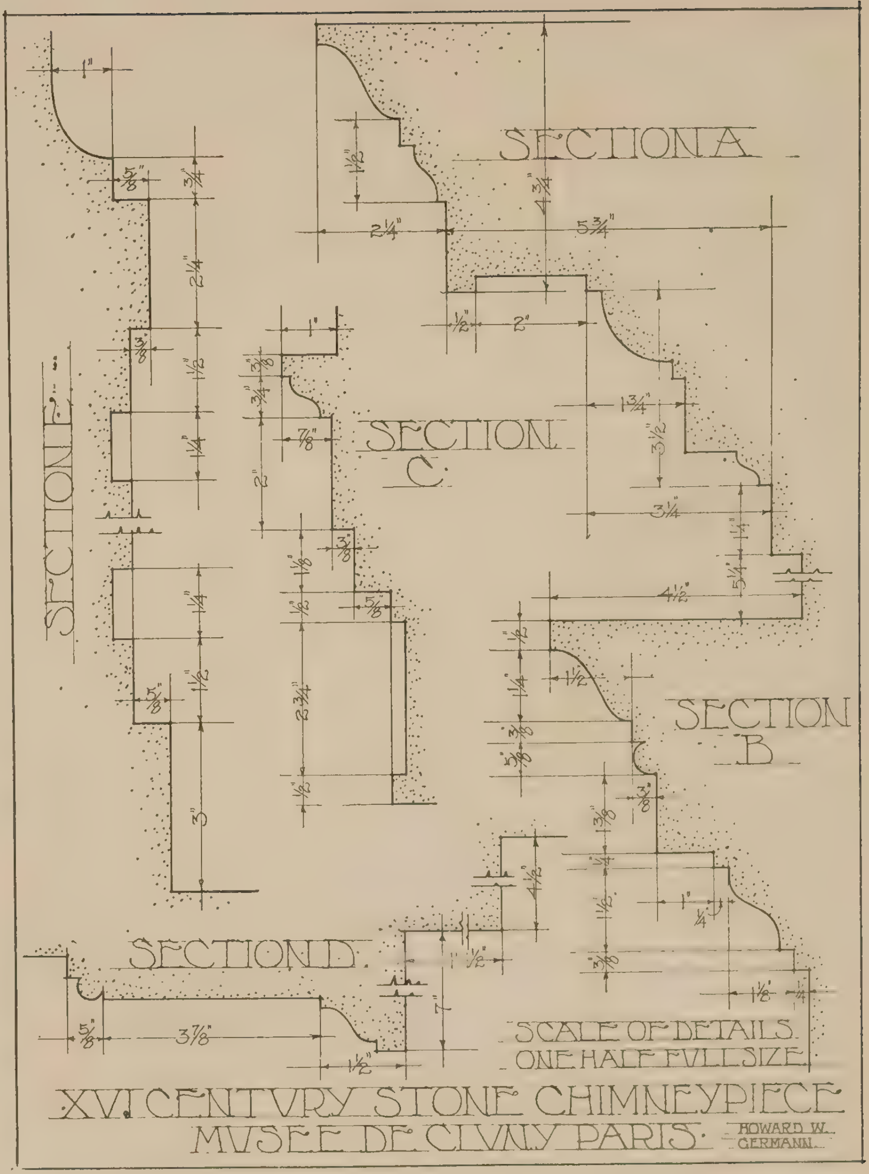
EARLY ARCHITECTURE OF THE OHIO VALLEY
CIRCA 1840

ENTRANCE
TO AN OLD CHURCH
COLUMBUS – OHIO

MEASURED & DRAWN BY
Daniel W. Weinz

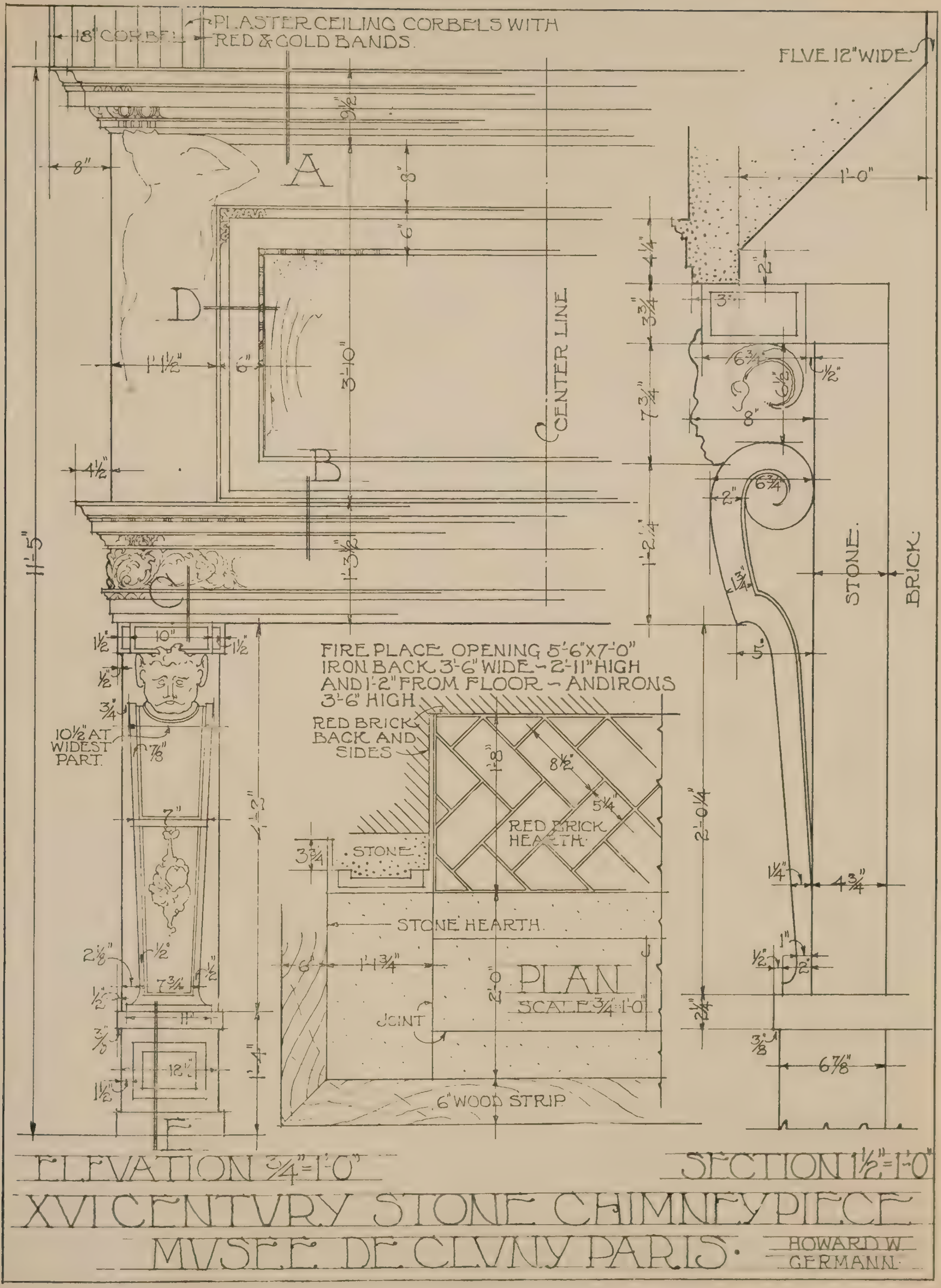


STONE CHIMNEYPIECE DATING FROM 1562.

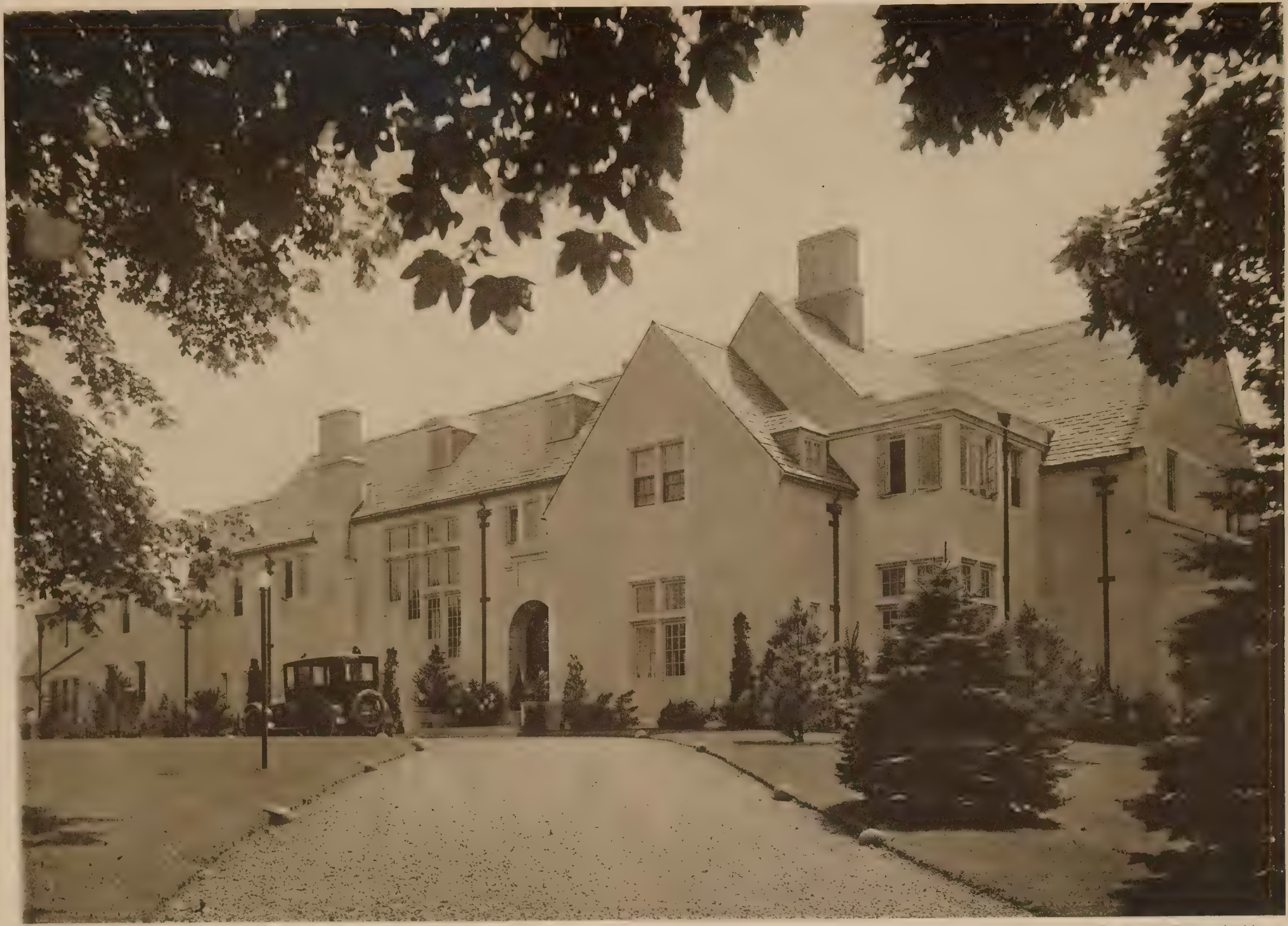


The work of Hughes Tallement.

In the centre panel is shown Christ and the Samaritan woman. Measured and drawn by Howard W. Germann.

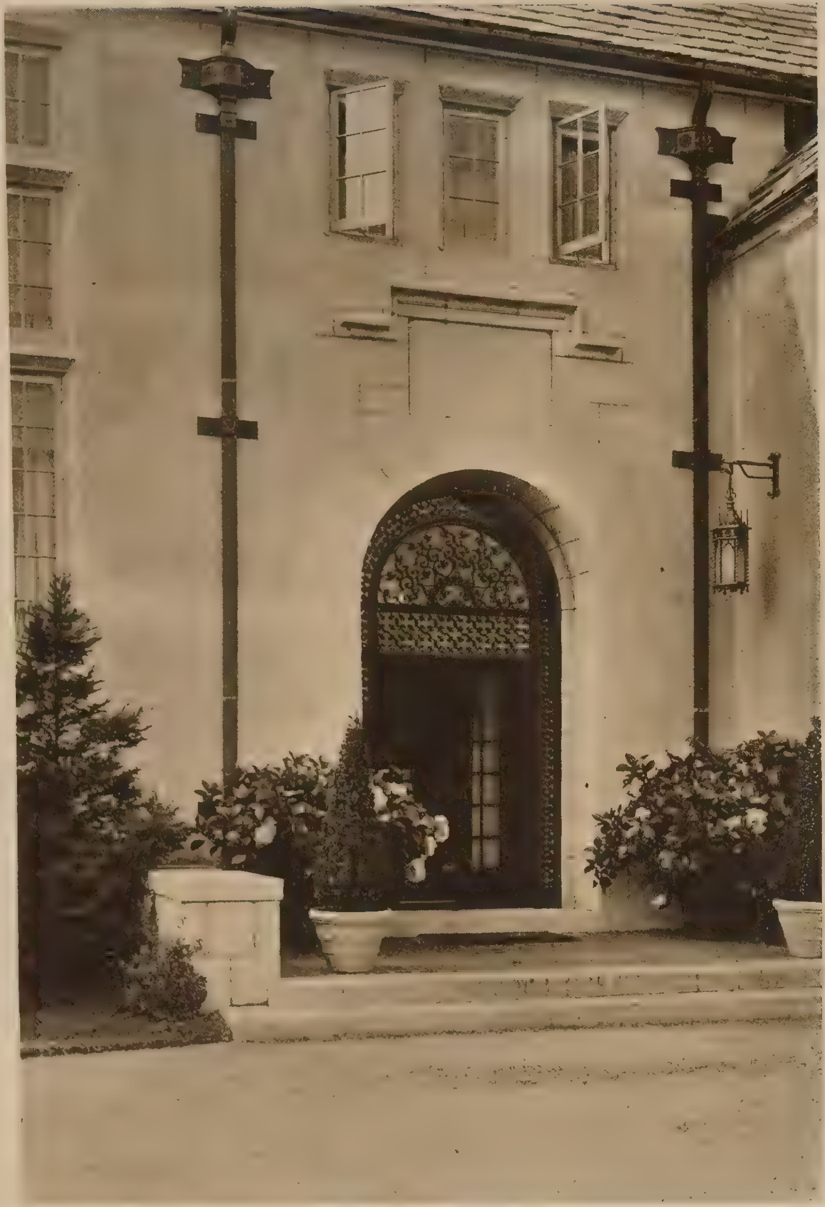


Measured and drawn by Howard W. Germann.

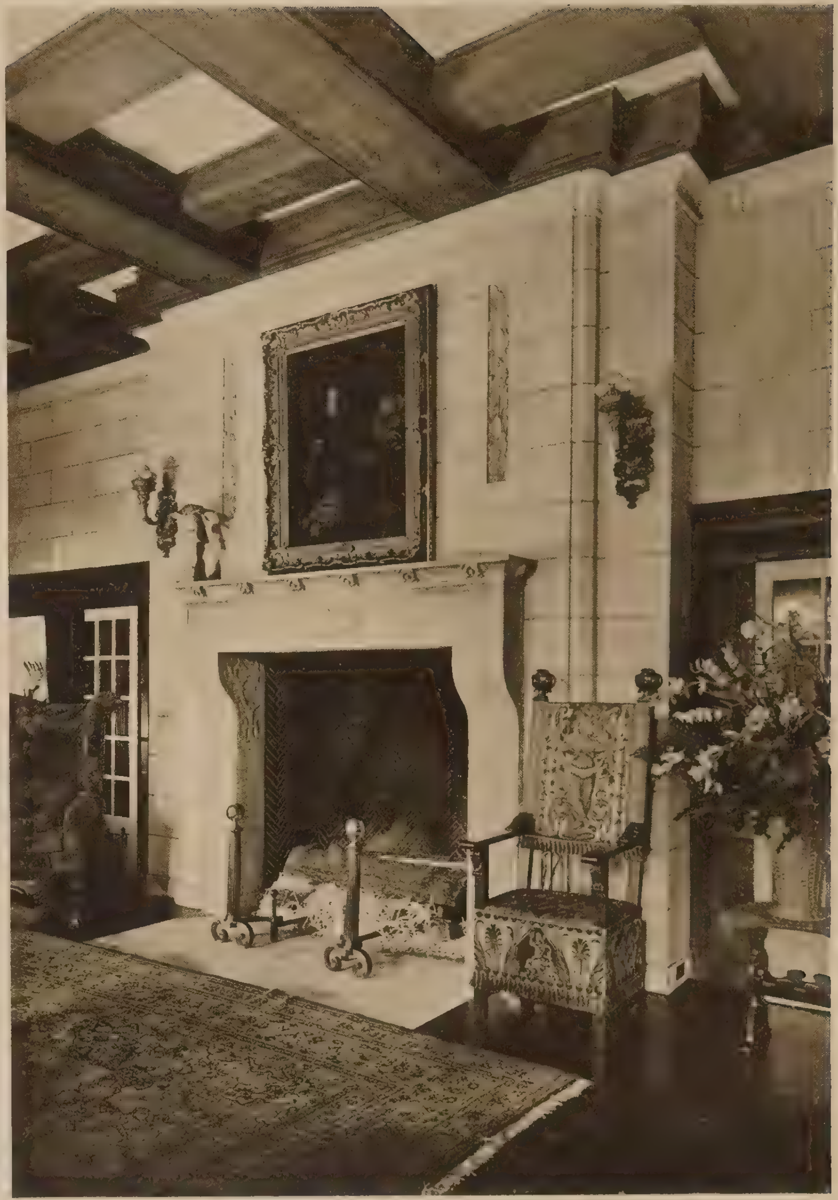


BLYNMAN FARM, RESIDENCE, WILLIAM A. COOLIDGE, MAGNOLIA, MASS.

Charles M. Baker, Architect



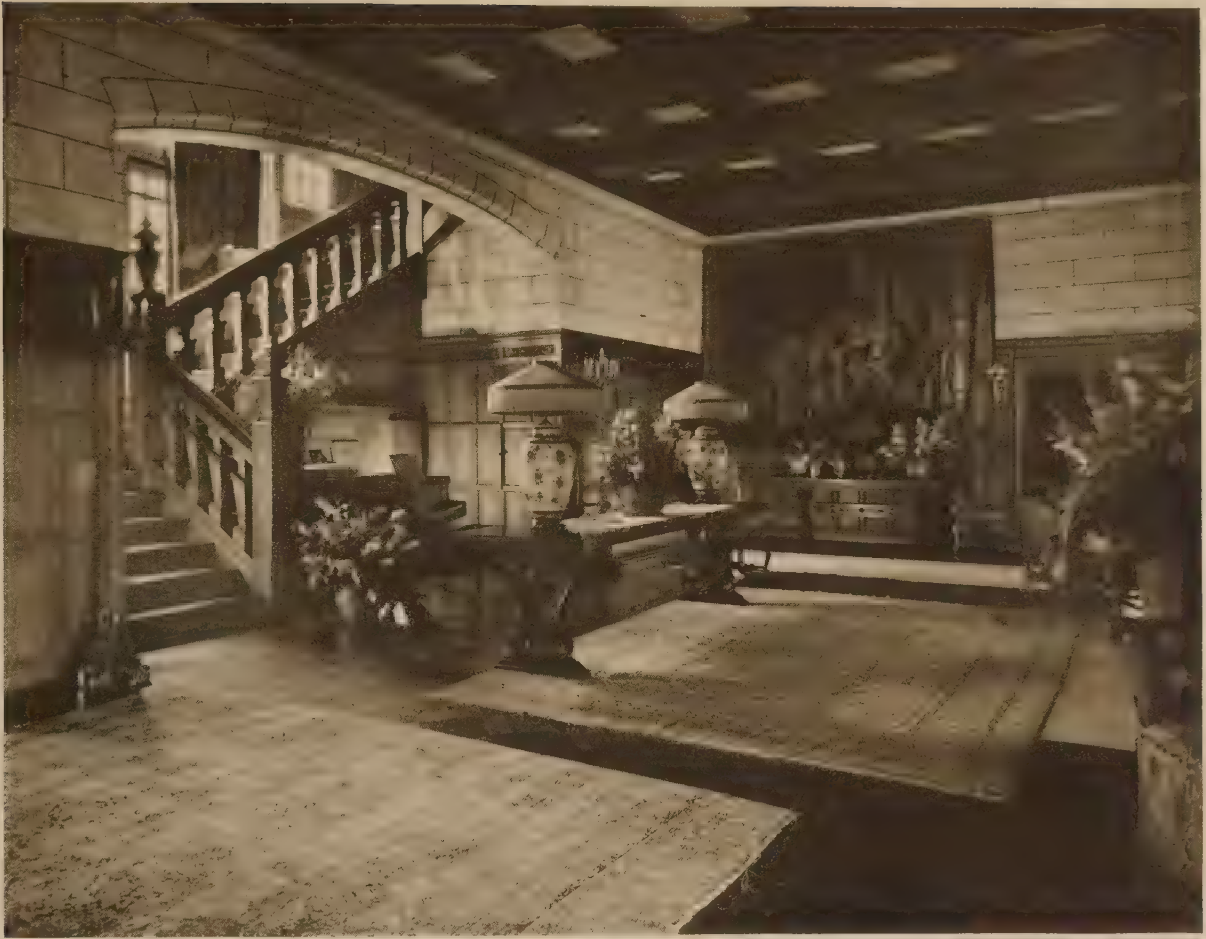
PORCH.



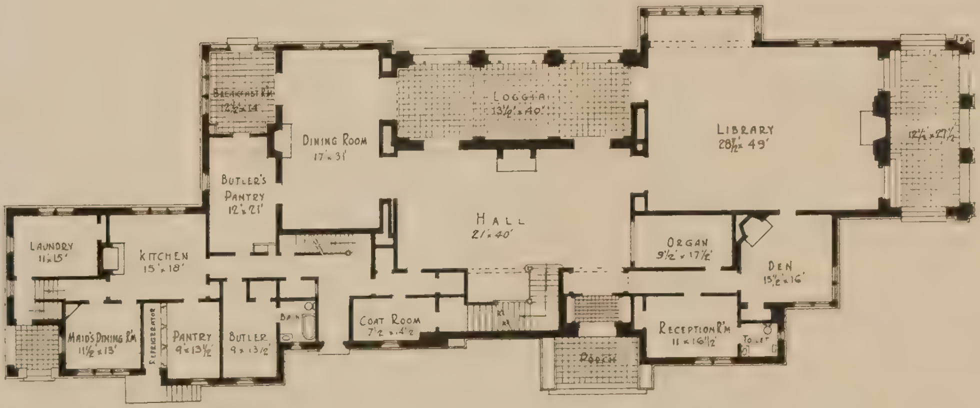
HALL FIREPLACE, OPPOSITE ENTRANCE.

Charles M. Baker, Architect.

BLYNMAN FARM, RESIDENCE, WILLIAM A. COOLIDGE, MAGNOLIA, MASS.

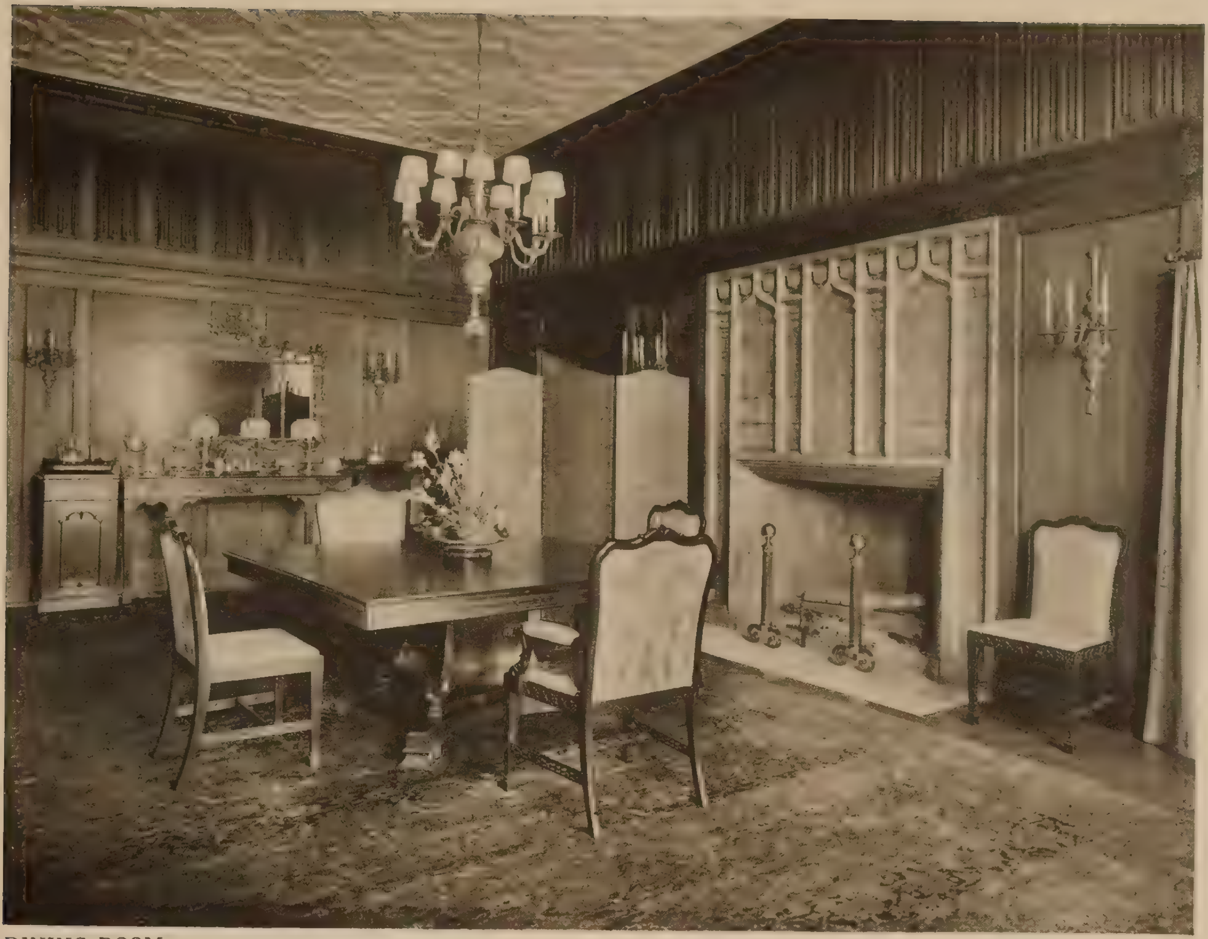


HALL AND STAIRCASE.

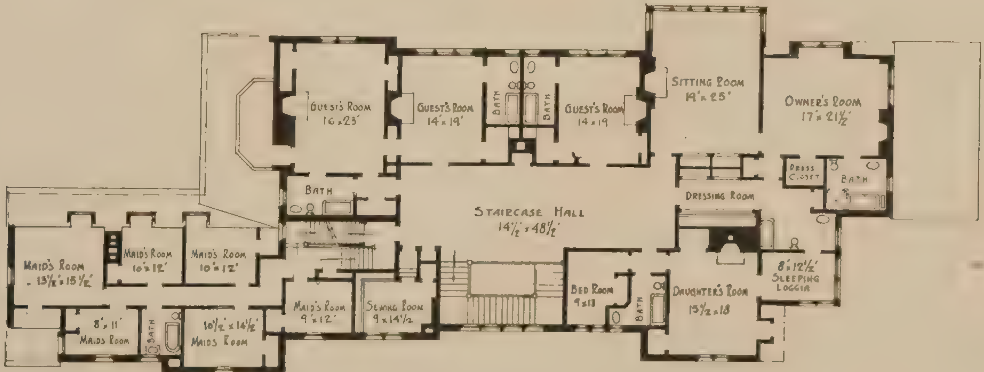


First Floor Plan

BLYNMAN FARM, RESIDENCE, WILLIAM A. COOLIDGE, MAGNOLIA, MASS. Charles M. Baker, Architect.



DINING-ROOM.

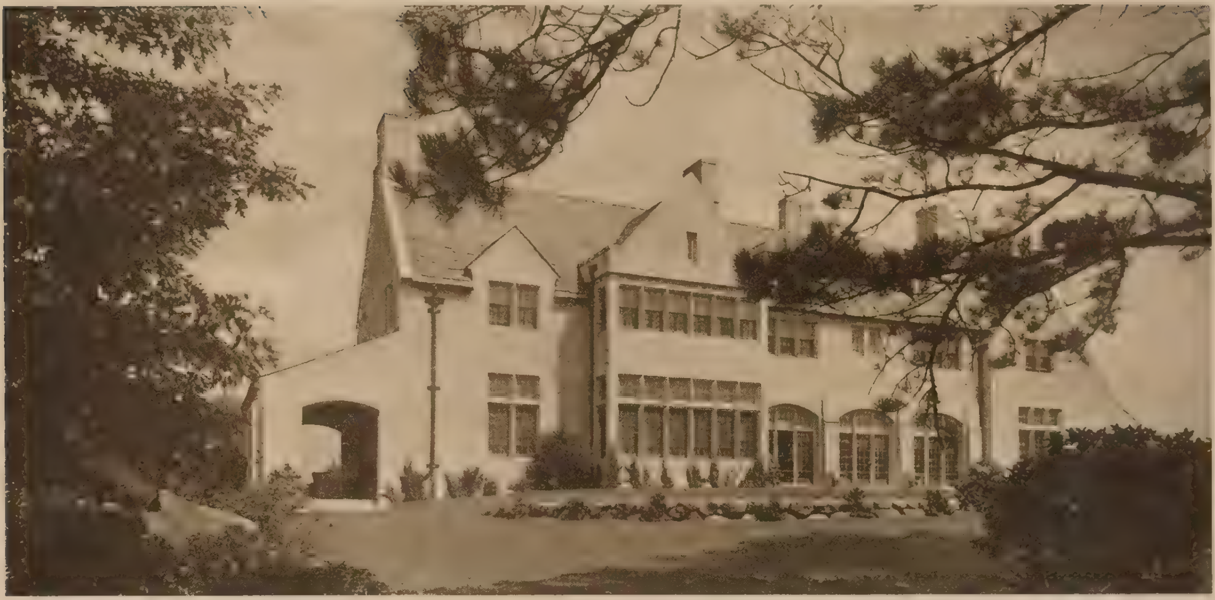


Second Floor Plan

BLYNMAN FARM, RESIDENCE, WILLIAM A. COOLIDGE, MAGNOLIA, MASS. Charles M. Baker, Architect.

Blynman Farm, at Magnolia, Mass.

Charles M. Baker, Architect



THE estate is a large one, bordering the back road that leads from Magnolia to Gloucester, overlooking country and sea. The house is in the Tudor style of architecture, closely following the English country house, although not an attempt at direct copy. It is very attractive with its stucco finish broken by stone trim over window and porch and cornice. It is topped by a roof covered with one-inch slabs of Tudor stone.

One enters through the wrought-iron door into an outer vestibule with Caen stone walls. This leads to the inner hall, which is finished in imposing oak panelling topped with Caen stone. Directly opposite the entrance is the fireplace, six feet high and five wide. This is backed with Holland splints laid in herring-bone pattern. It is an unusual house, showing many features such as are found very rarely, as, for instance, the organ chamber, which is at the right. The front of this is ornamented with a carved Gothic screen backed with silk. Under the stairway, which is directly opposite the fireplace, is the organ console, designed with two small concealed doors which, when closed, lend to view nothing but bench and pedals. Especial attention was paid to color schemes, and in this room Flemish tapestry is used as wall hangings and as upholstery for the settle and chairs. One can but receive a favorable impression of the house from the hallway, where hangings are red, and the final touch has been obtained by the tall bronze candlesticks, each one holding seven candles, which stand on either side of the hall.

Standing by the stairway, one can view the loggia or sun-room, one of the most charming bits of the house.

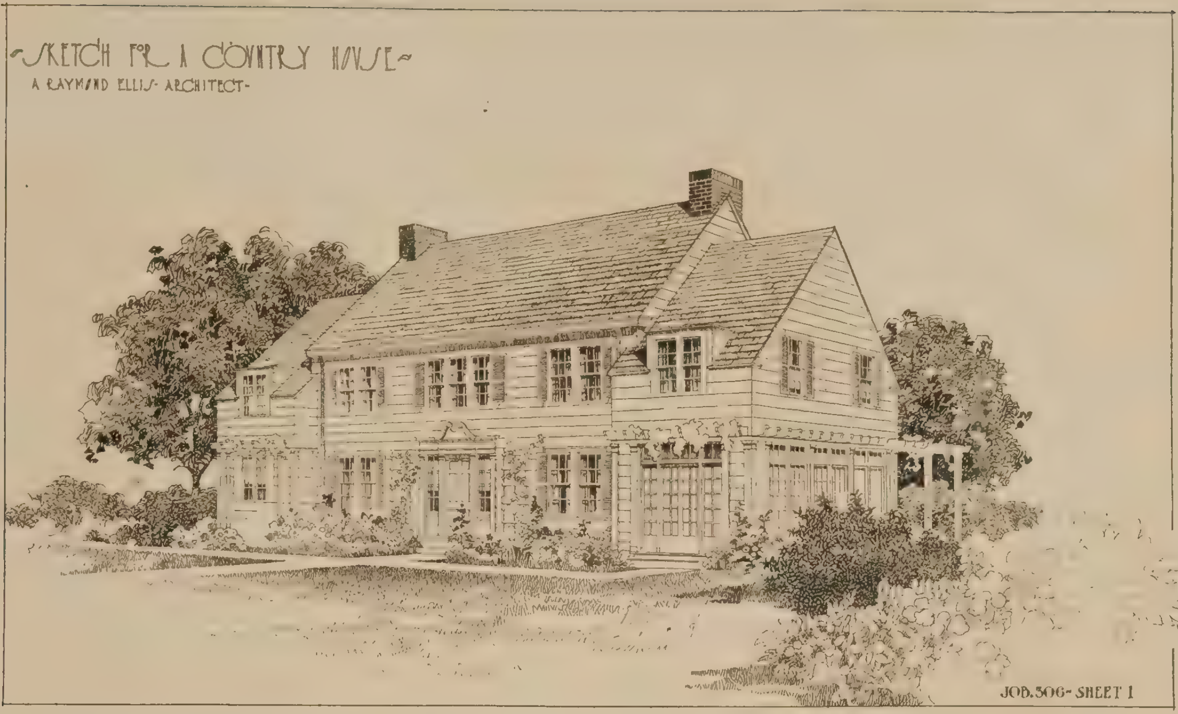
The den is at the right of the hallway, with a large bay window giving ample lights. The finish is oak, and posts supporting the rough-hewn beams are of oak also. Soft shades of rose in hangings and rugs give a restful tone.

Opening out of this is the library, a very large room connected with both the den and the loggia. All around the walls are bookcases, and a large bay window on the water-side gives a wonderful view of the sea. The room is finished with a plaster ornamental ceiling. The predominating color is green, which is worked out in hangings and furniture covers. The fixtures are black and bronze. This room overlooks the garden on the one side and the ocean on the front. A long French window leads out to the covered veranda, which is an out-of-doors living-room. From here steps go down to the sunken garden so closely connected with this part of the house.

The dining-room, which is entered from the hall, is on the opposite side of the house. It is large, and spacious panelled walls with linen folds are used for the upper part, meeting the strapped ceiling, which is a unique feature. Soft blue brocade hanging over white gives a subdued atmosphere. The furniture is Chinese Chippendale upholstered in soft blue, which blends with the tone of the Caen stone of the fireplace. One of the most interesting features here is the Chinese Chippendale cupboard, copied from a very old one which has been brought over the seas.

The most charming room of the house is the little breakfast-room with its small, square stone flooring. Here the hangings are Chinese printed linen with figures on a yellow background. The cane-seated chairs are covered with green-and-yellow slips.

No paper has been used on the second story nor, in fact, in the whole house. The rooms have had to depend on the hangings and rugs to give the necessary color.



A Suburban House

By A. Raymond Ellis, Architect

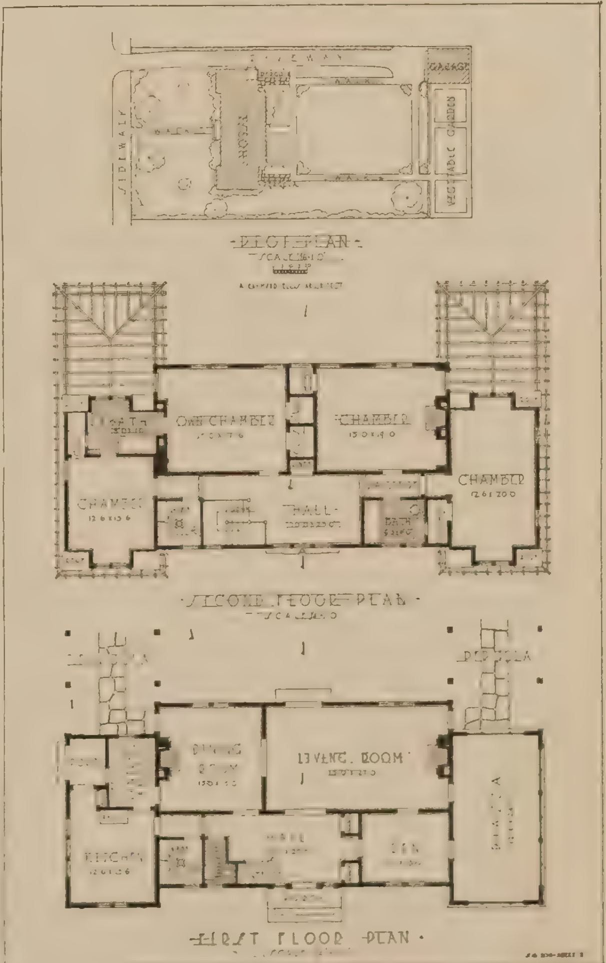
MANY intelligent people probably derive little conscious pleasure from good architecture, or feel any dissatisfaction at the sight of badly designed or improperly set buildings. Little do they realize the good or bad influence architecture exerts on them without their knowledge.

My limited space permits of only a very brief discussion of the subject of house-building and its most important details of plan and design. I believe the plans and perspective sketch are so graphic as to be almost self-explanatory.

In designing a house one of the most important things is to know what to omit for the sake of reasonable economy. The design presented here is of the most modern type of the elongated plan which is best suited to carry out the low roof lines which are used so much to-day in our present type and style of domestic architecture. While we have become tired of the old-fashioned square house, and prefer the lines of an extended front, this type of plan in general is better than the square or rectangle formerly used, and it obtains more privacy within the house and a better outlook over the grounds. The portion toward the street being planned to contain the less important parts of the house, acting as a screen in a way to the more important living portion at the rear, will be most attractive if a proper scheme of gardening is carried out.

The accompanying plan and design, I believe, is one of the most practical and successful that can be devised for a small house. It has been developed after a very careful study of several different schemes, each of which had been carefully worked out.

The entrance-hall is 10′ x 20′, and has been carefully planned and proportioned, with the idea of making it stand



out as indicative that the particular style of the interior is to be colonial. This has been done by the use of a low wainscot around the hall and up the stairs, with a simple colonial hand-rail and balusters gracefully ramped at the landing. At the ceiling there is a simple cornice with dentils to enrich it, all painted an ivory white. Under the stairs is a toilet-room, and at the opposite end are two closets for coats. From the hall a direct entrance is obtained to the dining-room and living-room, and a recessed entrance to the den gives to this room additional privacy that will be found a very desirable feature. The den is 10′ x 13′, and is so placed that it answers the purpose of den, library, or reception-room, with plenty of well-balanced wall space. The dining-room, 15′ x 15′, and the living-room, 15′ x 27′, occupy the entire east side, and opening into each other, should repeat the colonial detail used in the hall. Each has a fireplace. The piazza, 12′ 6″ x 24′ 0″, at the south end, is enclosed with glazed sash, which may be replaced with screens during the summer. The north end is given up to the service portion, which contains the service stairs, kitchen, 12′ 6″ x 13′ 6″, and pantry, 6′ 9″ x 10′ 0″, with refrigerator iced from the rear porch.

The second floor is planned for the convenience and comfort of both guest and owner. The owner's chamber is 15′ 0″ x 17′ 6″, contains two large closets, plenty of wall space for furniture, and has its own bathroom. The north chamber is also connected with this, so that it may be used by the owner en suite. Two large chambers at the south end may be used as guest or family chambers, and the bathroom is placed off the passageway, so that by closing the door to the hall the privacy of this part is maintained. The finish is whitewood painted old ivory.

In the attic there are three large, comfortable chambers and one bathroom, besides a storage-room and trunk-room.

The interior of the house may be finished in light or dark colors, as desired. I would suggest that the hall, den, dining-room, and living-room have the walls and woodwork painted in old ivory. The floors should be of oak. The service portion should be finished in hard pine, varnished, with the walls painted a sanitary cream or buff tint. The chambers and baths should be painted white or old ivory, with the chair-coverings and curtains adding the desired touch of color to carry out the owner's individual scheme of decoration, which affords an opportunity for either simple or elaborate decoration, as the owner may desire.

The house is of frame construction; the exterior may be covered with wide, old-fashioned clapboards, or with shingles laid about 10″ to the weather and painted white. The roof shingles and the blinds should be green.

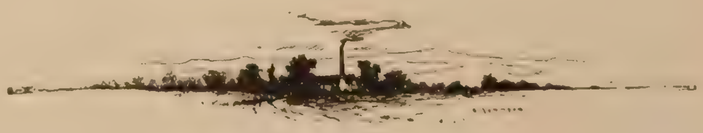
Our Temples of Business from an English Point of View

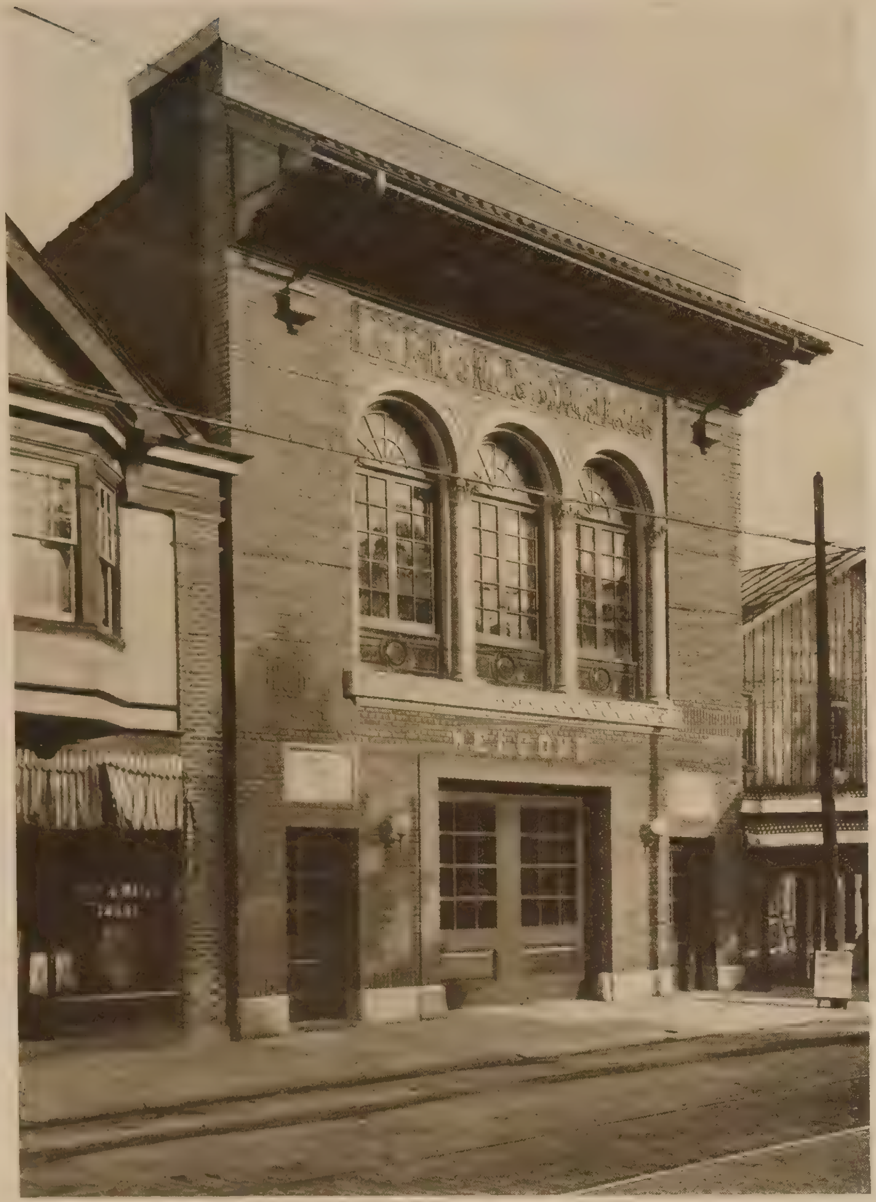
"The Artistic Soul" in Commerce

IN contemplating a British building of unusually large dimensions one's thoughts always take involuntary flight to America. This is not strange. In America the "mammoth" building is common. In Britain it is rare and remarkable. And as with the size so with the sumptuousness. Both lessons our commercial magnates have learned from the United States, where business enterprise may not be more keen than it is here, but is certainly more expansive, and, as some would say, more daringly experimental, which is equivalent to saying that it is more imaginative. Perhaps it is because America is a big country that its business men are alive to the value of scale as an investment; but by what mental process, or by what subtle business instinct, they have arrived at their shrewd perception that high-class decoration and lavish "trimmings" (an American term!) are—and again the expression is of transatlantic origin—"a paying proposition" is more a matter of conjecture. Most likely it arose from a realization that bigness and bareness sort not well together; or, still more probably, from an astute inference that a rich interior, being imposing and impressive, is, therefore, a valuable commercial asset.

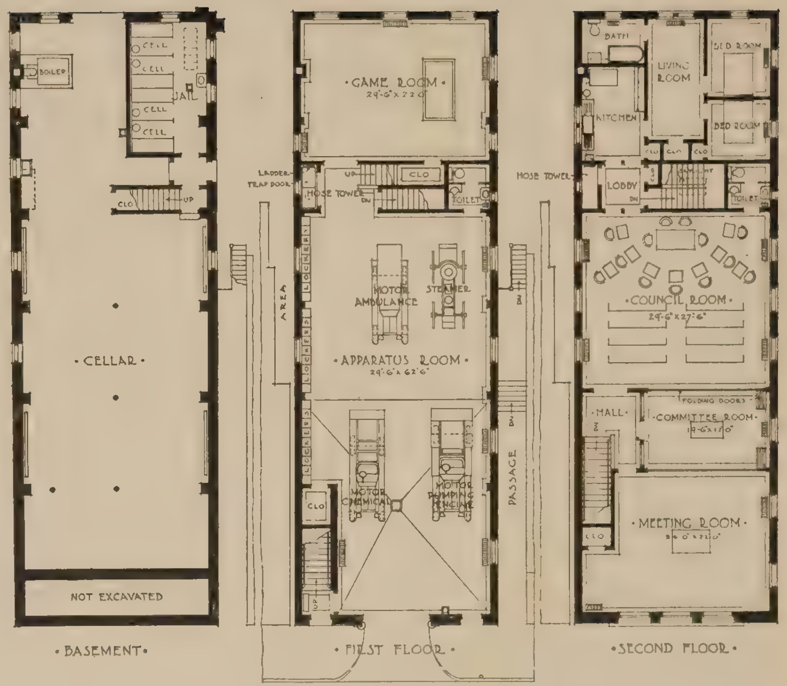
This is to take the lowest possible "basal plane." Keen as the American commercial man notoriously is in the pursuit of wealth it does not follow that he is without æsthetic intuition and impulse. If he were he would not have called on the architect to do his best—would not have lavished such fabulous sums on marble, bronze, mahogany—would not have authorized his architect to commission the best carvers and painters to co-operate in the production of a costly palace of commerce. Not only the commercial value of art, but the artistic soul in commerce, is, we fear, better understood in the States than it is here, even to-day. Here there is a strong tendency to draw a broad dividing line between art and commerce; there, the two entities commingle as freely as the pigment with its vehicle. To say that commerce is there impregnated with art is to risk the retort that there also art is impregnated with commerce. Most certainly there is interaction—and we make no doubt that it is for the good of both elements. "Out of strength cometh forth sweetness," is a reversible proposition. Banks, insurance buildings, the great shipping offices, have been designed and adorned, in America, in suchwise as to prove that there may be temples of commerce as well as temples of art. Indeed, in bringing such so-called temples of art as the theatre and the opera-house into comparison with the architecturally conceived business building, it is evident at once where dignity and restraint abide.

From "The Architectural Review," London.





FIRE-HOUSE AND TOWN HALL, AMBLER, PA.



The Fire-House and Town Hall was erected for the Wissahickon Fire Company at Ambler, Pa., on the site of a burned-out moving-picture theatre. Old side and rear walls, which extended about four feet above new second-story floor level, were continued to the new height. New supports were provided to carry the second floor. The new front was designed along Florentine lines. Various old fire-insurance companies' insignia were used as the motif in decorating the spandrels of the arcade. Above is an original panel of polychrome tile, made especially for the building by H. C. Mercer, of the Moravian Pottery, in which is illustrated the history of fire-fighting apparatus. First is shown an old town pump, from which the firemen are carrying water in buckets. Next in order are shown an old-fashioned hand pumping-machine and a steam horse-drawn engine. Here, also, is suggested a fight between rival companies. In the last picture is shown a modern motor-driven pumping engine. The cornice is painted brown, orange, and green, touched up in places with red. While the paint was fresh it was rubbed over with dirt to give an antique effect. The front is faced with varying shades of "tapestry" buff brick, laid in shadow diamond pattern.

C. E. Schermerhorn and Watson K. Phillips, Associate Architects.

Recent Development in the Architectural Treatment of Concrete Industrial Buildings

By Arthur J. McEntee

THE design and architectural treatment of concrete buildings is probably the most interesting development that has taken place in architecture for many years. Buildings executed in stone, brick, and other materials have not shown any decided change or improvement, except in a few instances, but the use of concrete, which has only within recent years been appreciated by some of our foremost architects, has been productive of results which are surprising and worthy of careful consideration and study.

Reinforced concrete construction first gained serious consideration because of its fireproofness, the speed with which a building could be erected, the comparative facility with which the required materials could be obtained, and the economy of this construction as compared with other accepted methods. Not only was there a saving in the initial cost of such a building, but there was an appreciable reduction in the cost of insurance, maintenance, and other items which are vital factors in determining the value of a building to an owner.

U. S. Army Supply Base, Brooklyn, N. Y. Cass Gilbert, Architect.

The general use of reinforced concrete was adopted in the early '90s, and on account of the crudity of construction in the early stages of development its use was confined to industrial buildings. The lack of consideration formerly given to the designing of this class of buildings had long been apparent, and the advent and use of concrete has been, in a great measure, responsible for the marked improvement which has taken place.

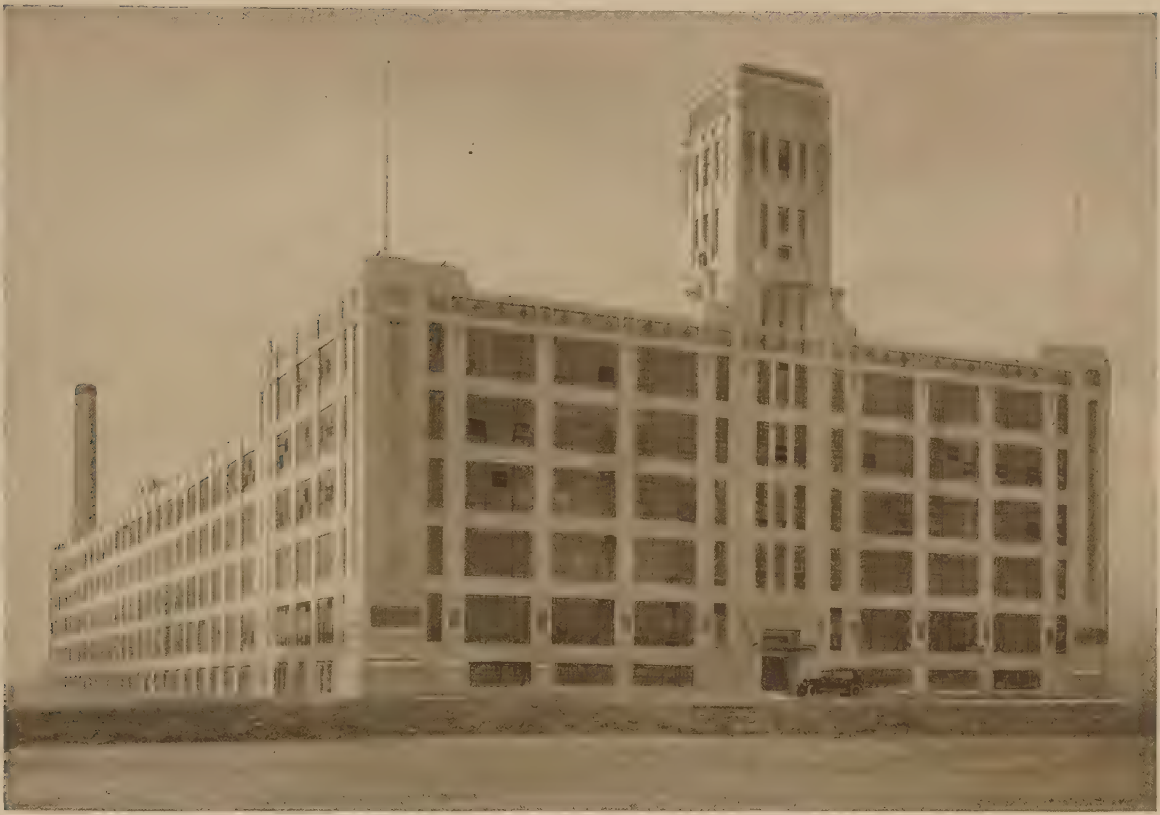
The early concrete buildings were nothing more than "structures," usually designed by an "engineer," who is mainly interested in the structural design, and can see little reason for spending time and money in decorating or beautifying the skeleton which he has devised. In order to emphasize the economy of this type of construction, the columns, beams, and other structural units were reduced to the minimum sizes required by the conditions. This resulted in the necessity of using large window areas, which condition eventually caused a decided change in the planning and designing of this type of building, for clients were quick to realize the value of the increased lighting. This naturally led to a more thorough and comprehensive study of the lighting, heating, ventilating, and sanitary requirements to suit each individual case. It was during this phase of the development that the architect received consideration, and the many fine examples of industrial buildings of to-day are the result of co-operation between the architect and engineer.

The value, to the owner, of a well-planned and attractive building asserts itself chiefly in two ways: increased efficiency and production due to the conditions under which the employees work, and in its value as an advertising asset, which is generally recognized in the commercial world.

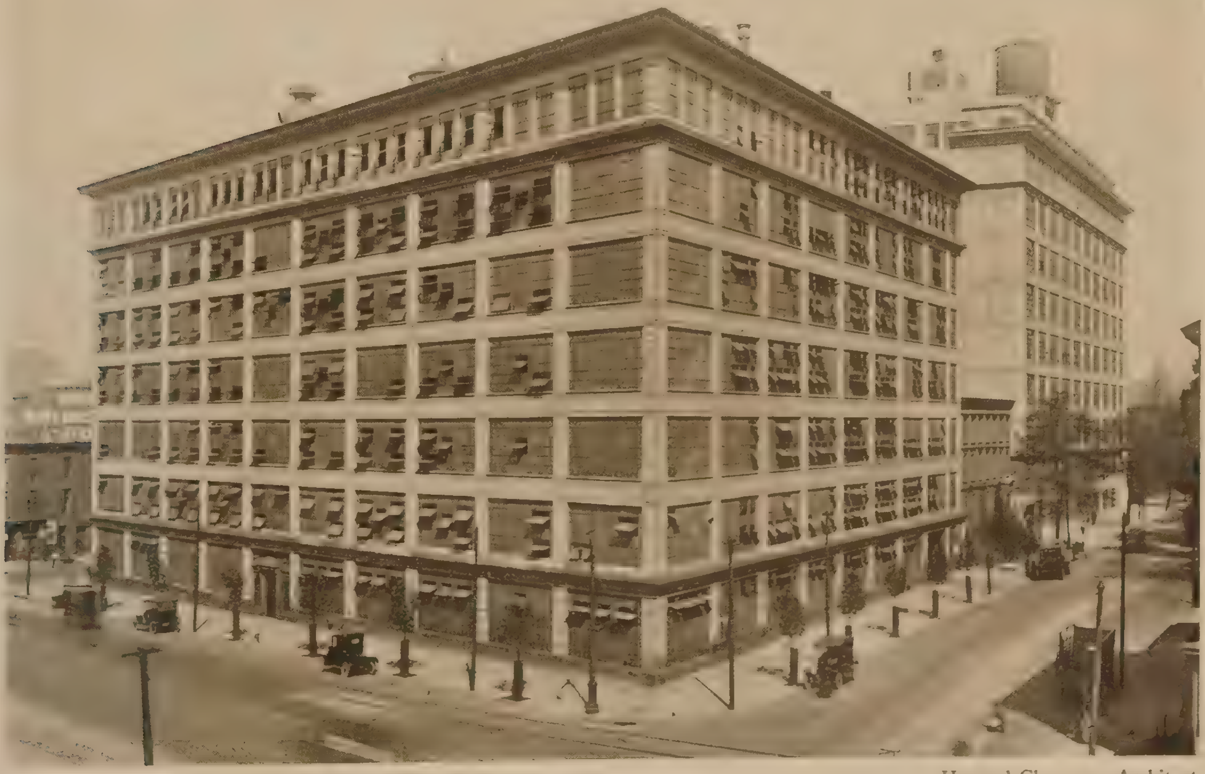
A building should indicate by its exterior treatment and design something of the purposes for which it is intended. The indiscriminate use of decoration and color should be avoided in the design of an industrial building, for if the treatment of such a building is kept along simple lines the result is always more satisfactory. This is especially true in the designing of concrete buildings for the disposition and proportion of structural units, and the selection of materials can be so handled as to obtain a building which at once conveys the impression of simplicity and utility.

Successful results in concrete requires that the designer possess a thorough knowledge and understanding of the material which he is using. The use of decorative details should receive the most careful study. In designing detail, the fact that forms must be constructed and possibly used

Rigney & Co. Building, Brooklyn, N. Y., six-story and basement building, 75 x 90 feet. Approximate area, 49,230 square feet. Helmle & Corbett, Architects.



THE AMERICAN CHICLE CO. BUILDING, LONG ISLAND CITY, N. Y. Ballinger & Perrot, Architects.



A. SCHRADER'S SON, INC., BROOKLYN, N. Y. Howard Chapman, Architect.

Ten-story factory, 100 x 184 feet. Approximate area, 184,000 square feet.

over many times should be considered in order to obtain a type of form which will permit of its being "stripped" in such condition as to allow it to be reassembled and reused. The use of concrete has developed a peculiar "stype" which is characteristic of the material and possesses a squareness and simplicity which is primarily due to the requirements of form construction.

Contractors who have had a wide range of experience in this line can be of invaluable assistance to the architect in deciding the manner in which such detail may best be handled. To prepare a design with the intention of having the contractor worry it out is seldom productive of the best or most economical results.

American Safety Razor Co. Bldg., Brooklyn, N. Y.

The use of intricate and complicated design is to be avoided, as it is almost impossible to properly fill a form which contains many corners. Furthermore, in removing forms from such work, a certain amount of damage is caused to the concrete surfaces, necessitating considerable patching, which at best is unsatisfactory, and is an added cost to the construction of the building. Details should be so studied as to reduce them to the simplest possible design, in order to obtain the desired result, as the cost of form work is a very large item and should not be slighted.

In the preparation of this article the writer has selected examples of concrete buildings erected by the Turner Construction Company, which may be considered typical subjects for illustration.

What is probably the simplest and most striking group of concrete buildings ever constructed is the U. S. Army Supply Base, Brooklyn, N. Y. These buildings are without any decorative detail whatsoever, and possess a quiet dignity and character which is at once apparent. The Austin-Nichols Warehouse, Brooklyn, is an excellent example of the modern adaptation of Egyptian architecture to the present-day requirements of commercialism. The simplicity of these buildings is most interesting and shows what satisfactory results can be obtained by the use of this one material—concrete.

The effective use of brick curtain walls is well illustrated in the U. S. Navy Supply Base, Brooklyn, N. Y., and the American Can building.

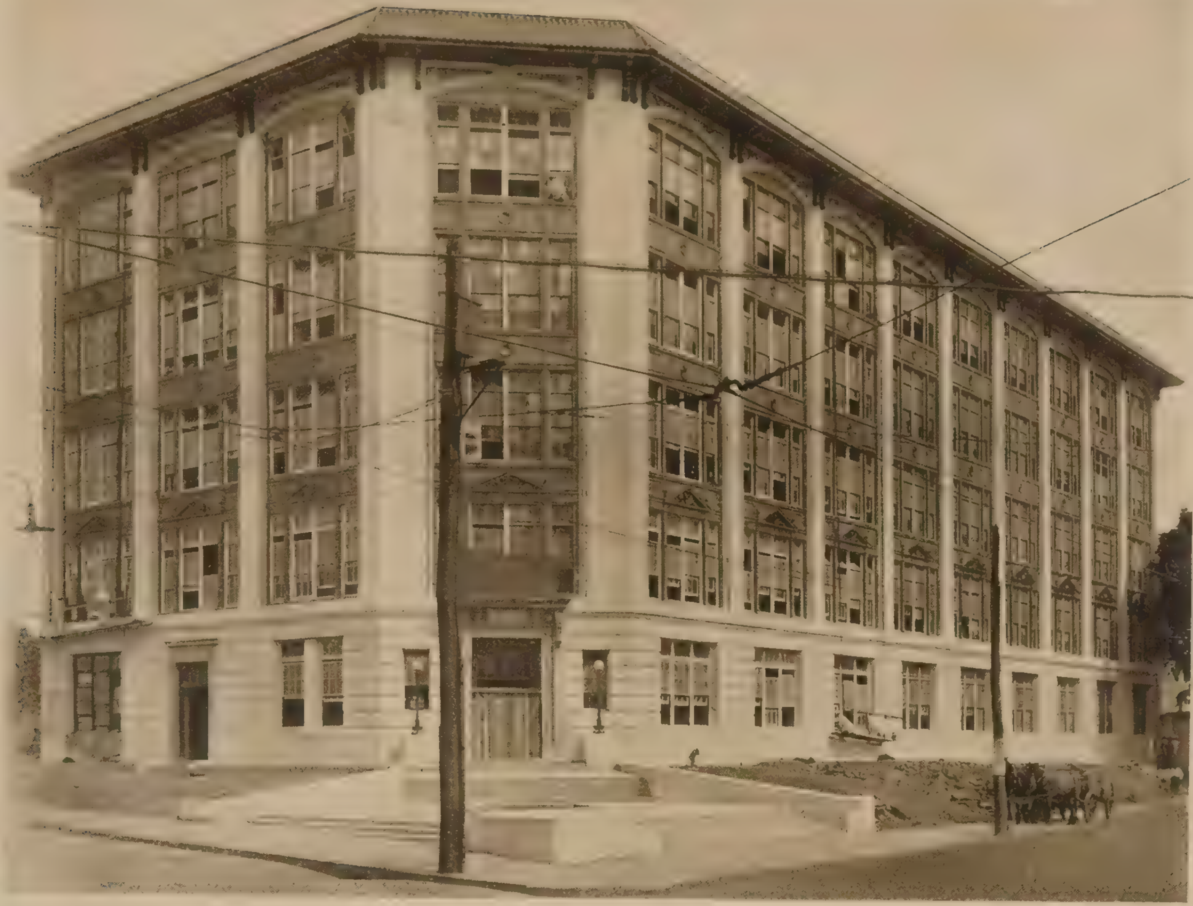
Examples of buildings of more ornate character are those recently erected for the Mint Products Company, Port Chester, and the American Chicle Company building, and illustrate the use of faience tile in conventional design. The architectural detail of the American Chicle Company building is a most interesting study of design, and shows that scarcely no limit is placed on a designer by the use of concrete as a material with which to execute his work.

Many other equally good examples are available to show the possibilities of design in concrete, and there is no doubt, since the concrete building is to be the subject of serious consideration, that the future development of design along these lines will be a revelation to those who have been inclined to give concrete but a passing thought.

Keep Water from Behind Stucco

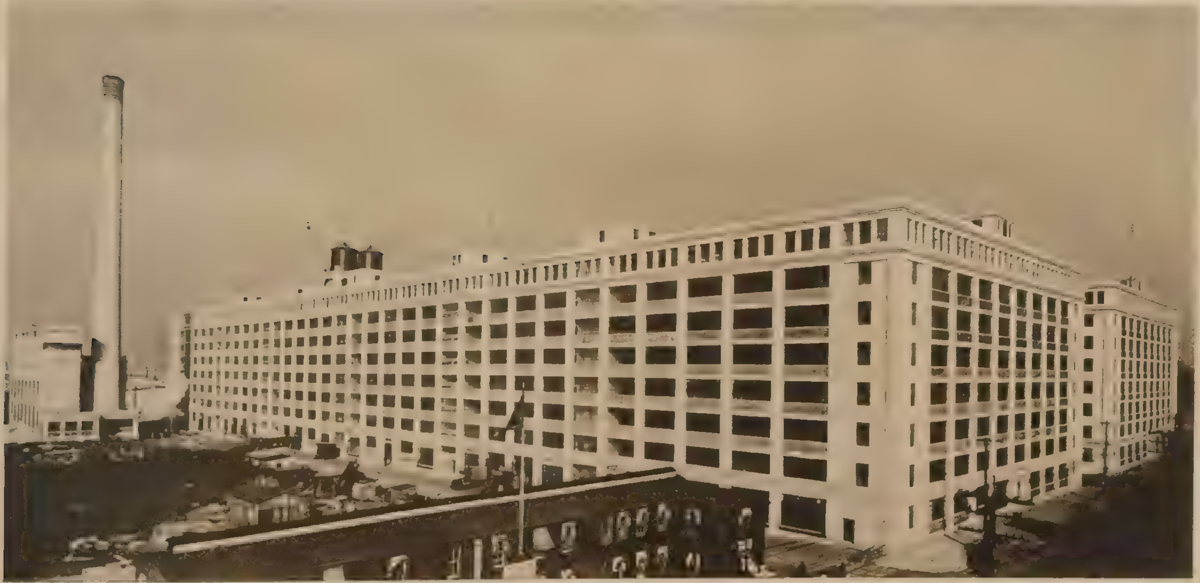
SUCCESSFUL stucco work depends in large measure upon suitable design of the structure for stucco. Exterior plaster of any kind merits whatever protection can legitimately be given it, and while concession must sometimes be made to architectural requirements, there is rarely any necessity for subjecting stucco to an exposure which it cannot reasonably be expected to withstand. Even where stucco will remain structurally sound, it is sometimes wiser to use other treatment for the sake of appearance. For example, it is better not to run stucco to grade, not only because of the danger from frost action, but also to avoid staining of the stucco from dirt and moisture.

■ A fundamental rule in the design of a stucco structure is "keep water from getting behind the stucco."



MINT PRODUCTS CO., PORT CHESTER, N. Y. Lockwood, Greene & Co., Architects.

5-story factory, 202 by 80 feet; approximate area, 85,700 square feet.



U. S. NAVY FLEET SUPPLY BASE, BROOKLYN, N. Y., BUREAU OF YARDS AND DOCKS.
Howard Chapman, Associate Architect.

2 storehouses, 8 stories, each 700 by 200 feet; 2 warehouses, 1 story, one 355 by 300 feet, one 355 by 361 feet; power house, 3,000 horse-power; 10 miles of railroad tracks; 2 float bridges.

Writing the Specifications for a Small House

By David B. Emerson

THE specifications for small houses have in the past, as a general thing, played a very small part in the affairs of the architect. In most cases the small house has been built by aspiring young architects, or by near-architects who have graduated from the carpenter's trade or just took to architecture naturally; consequently, the specifications have been far from complete. All of this was very well when prices were normal and a house could be built for something like a reasonable amount of money, but in these days of high prices for both material and labor, and with the entire country facing a shortage of housing, the question of small-house building bulks very large.

In open competition nothing helps the bidder more than careful and complete specifications, couched in simple language, and free from unnecessary verbiage and needless repetition. Without proper specifications an honest builder will bid high to cover contingencies, and dishonest and tricky ones will bid low and then try to make their profit on the overcharging of extras and the using of inferior materials where no definite mention has been made in the specifications. It can be said the surest way to get what you specify is to be sure you have specified it. Taking, as an example, the very pleasing little house by Mr. Hertz illustrated in the June number of ARCHITECTURE, we will discuss the specifications for such a house, to be built in various localities, in the most satisfactory and economical manner.

After specifying the excavation, grading, and refilling, the first item to consider will be the footings, which in all cases, except where it is nearly or quite impossible to obtain broken stone, concrete should be specified. Concrete should be mixed in the proportions of one part cement, three parts sand, and six parts broken stone. The cement should be an approved brand of Portland cement; the sand should be clean, sharp, and well graded, and free from loam, clay, vegetable matter, or salt; broken stone should be good, hard stone, free from dirt or crusher dust, and it may grade up to 2½″ in its greatest dimension. If easier to obtain, a clean, coarse gravel or crushed blast-furnace slag may be specified. Concrete may be mixed either by machine or by hand, but in either case the resulting mixture should have the stone thoroughly incorporated in the mixture, and each batch should be of uniform color and consistency. Foundation walls may be specified to be of concrete, if other materials are not cheaper or more easily obtained.

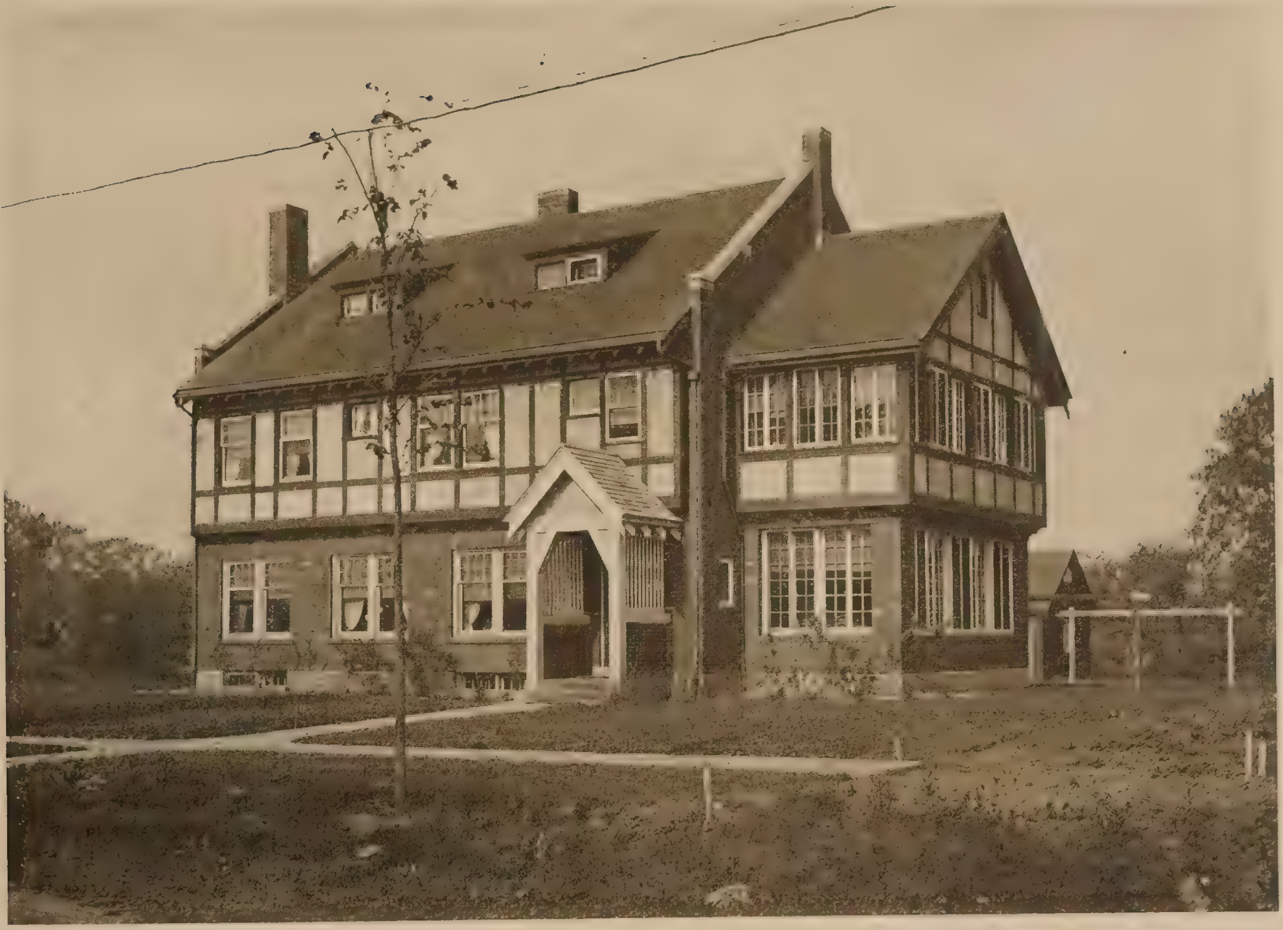
Forms for concrete should be of dressed lumber, well-braced and properly wired together to prevent spreading. If the soil is damp, and there is any liability of water seeping into the basement, the concrete should be waterproofed. This can be done, with very little added cost, by specifying that all concrete below grade shall have fifteen pounds of hydrated lime added to each bag of cement used. This will effectually close all of the pores in the concrete. The cellar floor should be of concrete, the same as specified for the walls and footing, finished with a cement finish composed of one part of cement and two parts clean, sharp sand, floated on while the concrete is still wet and trowelled smooth. Finish which is put on after the concrete is set seldom bonds with the concrete, and is liable to crack and shell off. If it should happen that split ledge stone is plentiful and easily obtained in the locality where the house is to be built, rubble-stone walls may be specified, and the chimneys up to the level of the first floor may also be laid up in rubble-stone masonry. The stone should be specified to be large-size stone, laid to the lines on both sides. All stone should be laid on its natural bed, should be well bedded, and all voids filled solid with spalls and mortar.

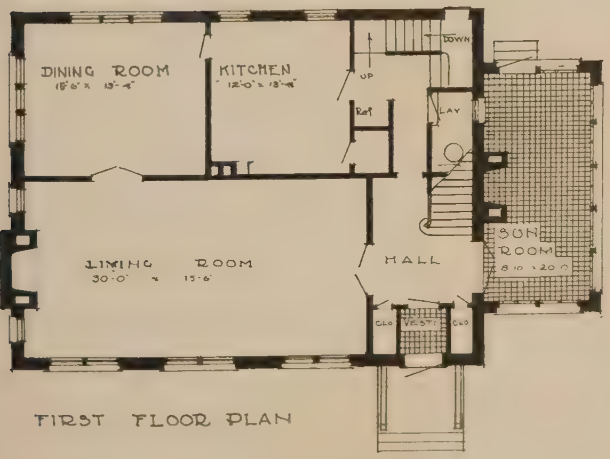
The walls should have one header extending through the wall every 2′ in height, and every 3′ in length, and properly staggered. Headers should be good flat stone, not less than 12″ wide and 8″ thick. No stone should be used which does not bond into the wall at least 6″, and at least one-half of the stones should be two-thirds the width of the wall. The foundation walls should be laid up in cement mortar, composed of one part Portland cement and three parts clean, sharp sand. All brick should be specified to be good, hard, well-burned, local brick, free from swollen or refuse brick, to be laid up with level and completely flushed joints. All brick which are not laid in freezing weather should be thoroughly wet. Mortar for laying up of brickwork above the foundations should be specified to be lime and cement mortar, composed of one part cement, one part slaked lime or dry hydrated lime, and six parts clean, sharp sand.

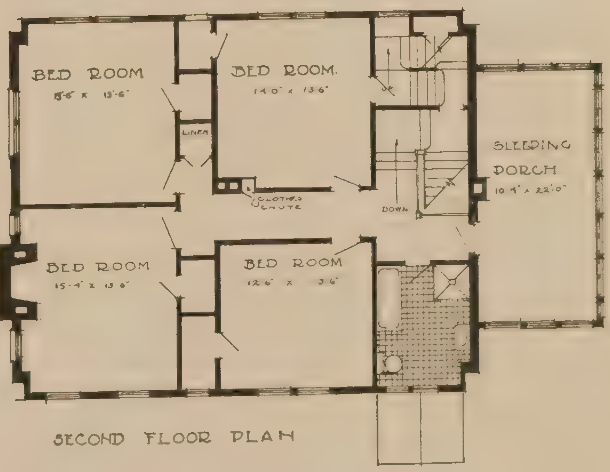
All fireplaces should be specified to have trimmer arches, which should be set low enough to allow for setting the hearths. All chimney-flues should be lined from the throats of the fireplaces to the top of the chimney with terra-cotta flue-lining. It is an excellent practice to specify that 4″ of brick should be laid up between the first-floor joists the full height of the joist. This will make the house warmer in winter, retard the progress of fire, and prevent rats and mice getting into the walls.

The kind of timber specified will depend entirely on the locality in which the house is to be built; in some sections spruce is used, in others white pine is used, and in the South yellow pine is used almost universally. The grade of timber should be specified. If white pine, No. 2 timber and No. 2 dimension should be used; if yellow pine is used, square-edged and sound should be specified. As a word of warning, let me repeat what almost every writer on specifications has already said: "Don't specify structural timber to be free from knots and all other defects," as the grading rules for timber allow a certain percentage of knots and other defects, so that such conditions cannot be enforced on the contractors, and have a tendency to cause your specifications to be held up to ridicule by them.

All headers and trimmers should be specified to be doubled, and all headers over 5′ long should be specified to be hung in wrought-iron stirrups, or some form of patent beam-hangers. All joists which come under partitions should be specified to be doubled. The sheathing and underflooring should be specified to be No. 3 D. and M. common boards, either white pine or yellow pine, according to the local market. Although this stock is defective, and does not look very well, it is sufficiently good for sheathing and underfloors where the knots, sap stains, and other defects will be covered. The sheathing and underflooring should be specified to be laid diagonally, as it tends to brace the frame. The walls should be specified to be covered with a good grade of sheathing paper, to be lapped 3″ and nailed to the sheathing







HOUSE AND PLANS, ROBERT TURNBULL, NIAGARA FALLS, N. Y.

Simon Larke, Architect.

boards with large-headed nails. Wherever the appropriation will allow it, specify cross furring on all ceilings, as it gives a much more level ceiling and a better surface for lathing. The furring strips should be of undressed lumber, ⅞″ x 2″, spaced 16″ on centres.

All of the lumber for the exterior finish should be specified to be either white pine "C" select finishing, or yellow pine "B" and better. The weather-boarding should be of ⅞″ stock, 9½″ wide, surfaced one side and both edges, and laid 8″ to the weather. The porch columns should be specified to be a lock-joint column, and they should be flashed on the tops of the caps with sheet lead.

Wherever the use of wood shingles is not prohibited by the local building code, they may be specified, and they make an excellent roof. The greatest danger from wood shingles is generally found in the advertisements for non-combustible roofing materials. Either Western red cedar or cypress shingles may be specified—whichever is the more easily obtained in the locality in which the house is to be built, although in most cases the cedar shingles will be the cheaper. "Extra clear" should be specified except where cost must be kept down; then, "Star A Star" may be specified. They should be laid 4½″ to the weather, if 16″ shingles are used, and 5½″ to the weather if 18″ shingles are used. Each shingle should be nailed with two 3d. zinc-coated nails. Specify that all valleys and hips shall be laid close, using wide shingles, cutting them to the proper shape, and working 9″ x 14″ pieces of tin into each course of shingles.

The window-frames should be specified to have 2″ rabbeted sills, 1⅛″ pulley-stiles, ½″ parting beads, and ½″ stop-beads, the remainder of the stock to be ⅞″ thick. The pulley-stiles in all cases should be specified to be of yellow pine, the balance of the frame to be of the same kind and grade of lumber as is specified for the exterior finish. The frames for double-hung windows should have 5/16″ pendulums hung from the yokes by means of galvanized annealed wires. Casement windows should have 1½″ rabbeted plank frames. The sash should be made up of factory lumber, white pine, yellow pine, or cypress. They should be mortised and tenoned, and pinned. The casement sash should have moulded astragals and drip moulds.

The exterior door-frames should be 1¾″ thick, rabbeted, with 2″ sills and ⅞″ outside casings. The sills should be specified to be of straight sawn red oak. The interior door-frames should be ⅞″ thick, with ⅝″ adjustable stops, ploughed in, and they should be properly blocked up for hinges and lock strikes. If hardwood doors are to be used, they should be specified to be veneered. The veneering should be done on cores of white pine or wormy chestnut, 1″ wide by the necessary thickness, glued together. The veneers should be ¼″ thick, and the end veneers should be ½″ thick. Always specify that the stiles and rails of doors should be ploughed, and have a pine cleat glued in, to which the mouldings shall be nailed, so that the panels will be loose.

For interior doors, several very good types of veneered stock doors are on the market, which may be specified.

The interior finish may be specified to be either white pine "C" select finishing, "B" yellow pine finishing, or F. A. S. yellow poplar, all of which take paint or enamel very well.

The stairs should be specified to have heavy plank stringers, and main stairs should have treads 1⅛″ thick, and risers ⅞″ thick, tongued and grooved together, treads into risers and risers into treads. The size of the newel-posts and angle-posts should be specified, whether they are to be turned or built up. The size of the rails should be specified, and if they are to have ramps and easements, it should be so specified. The size of the balusters should be specified, how many to the tread and whether they are to be plain or turned, also specify that the balusters on landings shall be spaced the same as those on the treads. The cellar stairs should be specified to have plank strings, rough treads and risers, and plain ⅞″ hand-rail dressed.

If oak floors are to be specified for the principal rooms, red oak "select" may be used, as it will wear as well, and after staining and finishing, look nearly as well as white oak "clear," and will cost much less. For kitchen and pantry floors, if they are not to be covered with linoleum, factory-grade maple may be specified. This makes a particularly hard, durable floor, and with a little culling out of the particularly bad pieces it can be laid so as to look very well, especially if it is to be stained in the finishing, so as to obtain even color. If the floors are to be covered with linoleum, specify either "D" flat flooring yellow pine or "D" white pine flooring, according to the price in the local market. For bedrooms, a "C" flat flooring yellow pine makes a very good floor. Where strict economy is necessary, all flooring may be specified to be of yellow pine. All flooring should be specified to be standard, matched flooring, to be blind-nailed with 8d. nails, and all joints to be well broken.

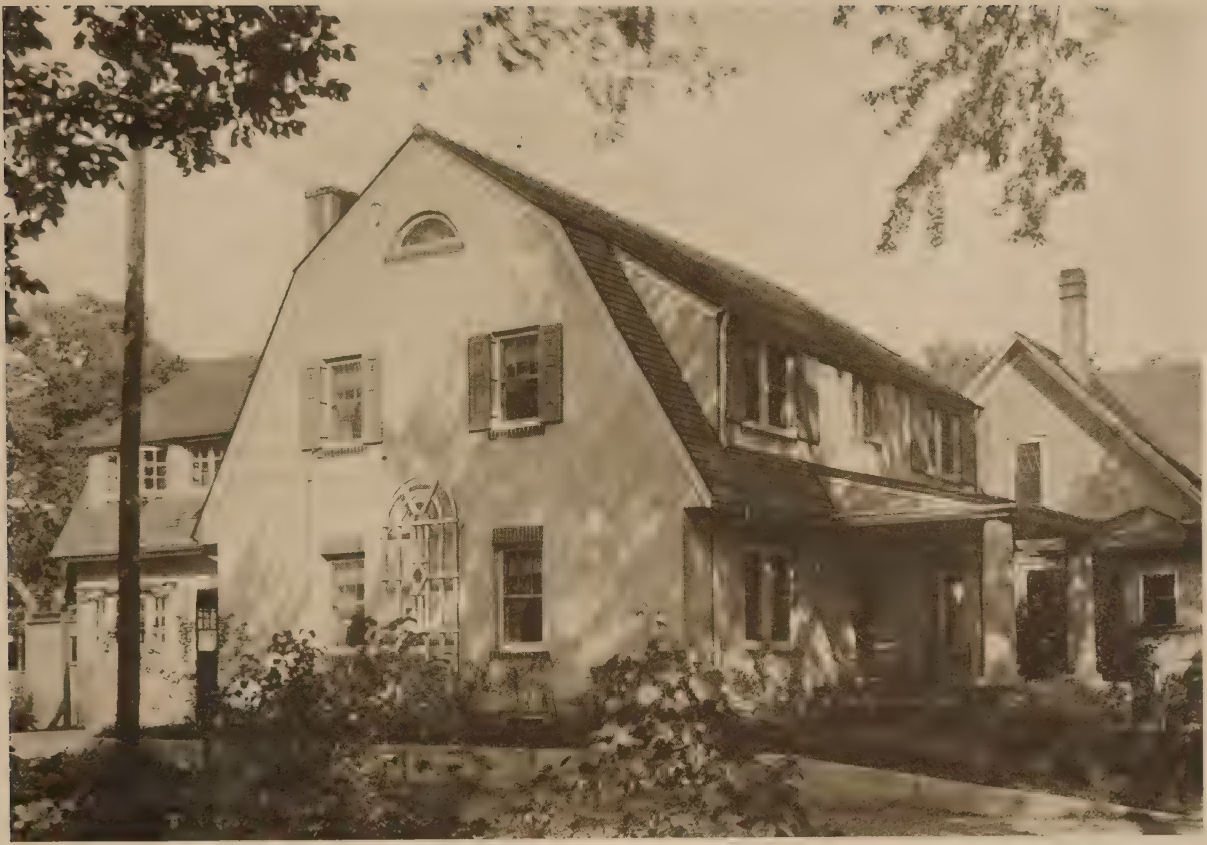
Tile floors should be specified to be laid on concrete foundations 3″ thick, which are to be laid on ⅞″ rough-board platforms set between the floor joists, and resting on ⅞″ cleats nailed to the joists. The concrete to be the same as specified for the footings, etc. The tile should be set in a levelling bed of cement mortar ½″ thick, in which has been bedded a painted or galvanized open-mesh wire netting. The joints in the tile should be specified to be grouted with cement mortar, mixed to the consistency of thick cream, and all of the surplus cement should be cleaned off before it has set. The joints in quarry tile should be specified to be ½″ thick and slightly concave.

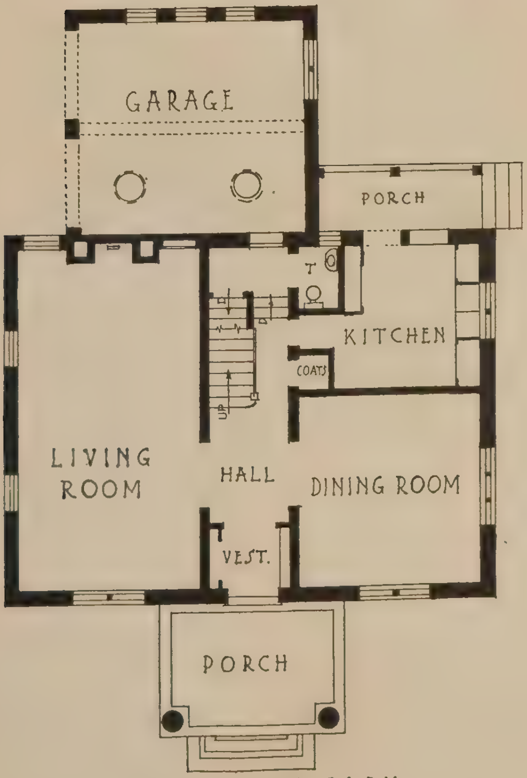
If a tile wainscot is specified for the bathroom the walls behind the tiling should be specified to be plastered with cement mortar on metal lath. The lath should be well lapped and stapled to the studding. The mortar should be mixed in the proportions of one part Portland cement and two parts clean washed sand, to be well scratched in a horizontal direction to receive the setting bed. The tile may be specified to be either floated on, or buttered. Specify that the tile shall have the joints washed out, and be neatly filled with thinly mixed white Portland cement, all surplus cement being cleaned off before it has hardened.

If hung gutters are to be used, they should be specified to be No. 26 gauge galvanized iron, with slip joints, and be hung in adjustable galvanized hangers. If box gutters are to be used, they should be specified to be lines with I. C. No. 40 coating tin, with flat seams, the tin to be painted on the under side with red lead or iron oxide before laying. The leaders should be specified to be No. 26 gauge galvanized iron, and to be provided with cast-iron shoes at the ground to connect with the drainage system.

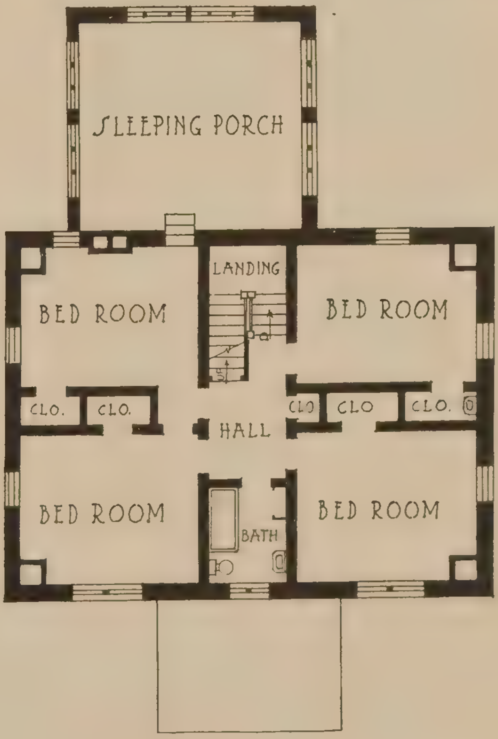
The canvas roofs over porches and sun-parlors should be specified to be of 12-ounce cotton duck, tacked with 17-ounce tinned carpet tacks, the edges of the duck being lapped 1″. After the duck has been laid it should be thoroughly wet, and then painted with pure white lead and boiled linseed oil before it has dried. Give it two extra coats of white lead and oil, allowing sufficient time between the coats for drying.

In specifying the painting, pure white lead and linseed oil, with the addition of 20 per cent of French zinc white should be called for. Now that the war is over, French zinc white is obtainable, and its use is recommended, as it





FIRST FLOOR PLAN



SECOND FLOOR PLAN

HOUSE AND PLANS, CLARENCE LARSON, FORT DODGE, IOWA.

Damon & O'Meara, Architects.

greatly increases the oil-carrying capacity of the paint, and thereby prevents flatting and chalking. In writing the specifications for enamel work, it is well to follow the manufacturers' specifications absolutely. In kitchens and pantries a very good low-priced job which stands well can be obtained by specifying one of the several mill whites which are on the market. These can be put on in three coats—finish, gloss, or egg-shell. They will stand any ordinary usage, are not affected by steam from cooking, wash easily, and do not turn yellow. The floors may be specified to be varnished or waxed, varnish being the cheaper. In either case, the floor should be specified to be perfectly clean and dry before finishing. The floor should first be stained with an acid stain, then filled with a paste-filler, lightly sanding each coat. Never specify shellac or liquid fillers as first coats on floors, as they will not stand the wear and tear. Then specify either two coats of reliable make of floor-varnish or two coats of prepared floor-wax. The second coat of varnish may be rubbed with pumice-stone and oil, or left in the gloss. The floor-wax should be applied with a rag, and each coat polished with a weighted brush, rubbing it with the grain.

Before starting to write the specifications for the plumbing it would be well to become familiar with the local sanitary code, if one exists, and avoid specifying anything which is contrary to the code, which will help to prevent extras after the contract is let.

The materials and sizes of house-sewers, house-drains, fresh-air inlet (if required by the local ordinances), and soil-stacks should be specified. The house-sewer should be of vitrified tile-pipe, and 6″ in diameter will be large enough for a moderate-size house. The house-drains and soil-stacks should be of cast-iron 4″ in diameter. One of the leading authorities on plumbing advocates 3″ soil-pipes, but it would appear to the writer that he is taking a chance, so it will be well not to specify less than 4″ pipe, except for waste from isolated sinks or lavatories, which may be of cast iron 2″ in diameter. Short branch wastes from lavatories or sinks may be of galvanized wrought iron or lead, 1½″ in diameter. Unless the sanitary code calls for back venting, do not specify it, but call for non-siphon traps of some type which have been thoroughly tested and been proven to be efficient. The efficiency of back-venting is questionable, and it adds materially to the cost of the building.

The young architect is very liable to leave the size of the supply pipes and branches entirely to the plumber, which is a dangerous practice, as he is liable to have rather optimistic ideas as to how much water can run through a small-size pipe, especially if he has not figured in a large profit on the job. Therefore, the sizes of pipe should be specified. The main supply from the street in a house of this size, having two bathrooms, a kitchen sink, laundry trays, and servants' water-closet, should be 1¼″ diameter unless low street pressure or excessive distance from the street make a larger size necessary. Branch to laundry and servants' water-closet should be ¾″ in diameter. Branch to hose connection should be ¾″ in diameter, and should have a stop-cock so placed as to drain the line. Boiler supply should be ½″ in diameter.

As a gas-heater will be required, specify a ¾″ branch to the heater. The main riser to the third floor should be 1″ in diameter, taking off a ½″ branch to the kitchen sink, the branch supplies should be specified to be ½″ diameter to the shower-bath and the bathtubs, and ⅜″ diameter to the water-closet tanks and lavatories. The gas-heater should be specified to be one of the several instantaneous heaters which are on the market, and should be specified to have a galvanized steel storage boiler, connected with the house-heater, so that in the winter months, when the heater is being run, gas will be used only to boost the system in case hot water is drawn more rapidly than it is being heated.

In the selection of the plumbing fixtures much must be left to the discretion of the specification writer, as the question of cost and the desires of the client are largely to be considered. Where the appropriation is small, specify enamel iron bathtubs, lavatories, sinks, and wash-trays. Where more money is available, specify vitreous china lavatories and porcelain tub in the family bath. In any case, specify the make and pattern desired, and insist upon getting them. The gas piping should be specified to be standard galvanized mild steel pipe, with galvanized malleable iron, beaded fittings.

All pipe should be run level where possible, and when necessary to be pitched it should grade toward the riser and should be without traps. Specify that the pipe should be put together with red lead or litharge, and that gas-fitters' cement will only be allowed at the outlet caps. System should be specified to be tested for one hour with an air-pressure equal to 15″ of mercury, and that the mercury must not drop more than ¼″ during the test.

Both as a point of economy on installation and on account of many owners preferring it, hot-air heating may be specified, in which case be sure to specify that wherever the pipes run in the partitions the studs should be covered with tin, and that the lathing over the pipes should be done with metal lath. All pipes which run in the partitions should be specified to be made double, with an air space between the inner and outer pipes. It is also well to specify that all the pipes in the cellar be made double, as it insulates them, making it easier to heat the rooms, and saves fuel.

The specifications for steam-heating and electric-wiring having been thoroughly discussed in a previous article (April, 1919), nothing will be said of them at this time. As far as is possible in the limited space in a single article, the writer has tried to cover the most important items in the specifications of a moderate-size house of moderate cost, but in all cases the specifications will vary according to the design and the desires of the owner, but the general principles will always be the same.

Announcements

The National Association of Women Painters and Sculptors, Mrs. H. Van Buren Magonigle, president, will hold an exhibition of small pictures and sketches in the rooms of the Architectural League, 215 West 57th Street, New York, from January 20 to February 1, inclusive. These pictures are limited in size to 12x14, inclusive of frame, and may be in any medium, including etchings. The Annual Exhibition will take place later in the season.

We call attention to the exhibitions of The Arden Gallery, 599 Fifth Avenue, New York. They are of unusual distinction and of special interest to architects and designers and students of the arts.

Their January exhibition of ritual and theatrical masks, together with decorated costumes, designed and executed by Madame Marie Gallenga, of Venice, attracted much attention. Included in this exhibition were Javanese marionettes, and some marionettes of the Punch and Judy type.

Book Reviews

THE XVIIITH CENTURY IN LONDON—THE ACCOUNT OF ITS SOCIAL LIFE AND ARTS. By E. Beresford Chancellor, M.A., F. R. Hist. Socy. New York: Charles Scribner's Sons. London: B. T. Batsford.

Contents: The Social Life of the Period; Street Topography; Pleasure Resorts; Clubs, Coffee-Houses, and Taverns; Great Houses and Public Buildings; The Churches; The Arts in the XVIIIth Century; Architectural Relics of the Period.

Few books have better illustrated the fact that the life and character of a people are reflected in its architecture and the arts. The Eighteenth Century was pre-eminently the age of red brick ornamented with stone. When we speak of Georgian our minds recall the familiar brick and stone trimmed houses, not only of London but of our own Georgian period, of which a number of landmarks yet remain, and the style is yet very much alive, and likely to be continued as possessing a certain stately dignity and simplicity.

The social life of the period has been pictured by Hogarth, Gillray, Rowlandson, and described by Pepys, Evelyn, Steele, Addison, Swift, and a host of artists and writers. In the illustrations that accompany the chapter on Social Life will be found many that show views of contemporary London, famous places of amusement and recreation: Southwark Fair, Hyde Park, Brook Green Fair, Bartholomew Fair, Smithfield, Covent Garden Theatre, Theatre Royal, Drury Lane, etc. Nearly all the illustrations from old prints include the contemporary architectural background. The chapter on "Street Topography" repeats the story of many cities, the great arteries of traffic are established, and the byways grow as the city grows. Piccadilly, The Strand, Fleet Street, Cheapside, Cornhill follow the way of two hundred years ago. The illustrations of Fleet Street, Cheapside, Temple Bar, Newgate, The Bank, The Mansion House, Gray's Inn, the View of St. James's Palace, Carlton House, and of other famous old buildings have universal interest. The Pleasure Resorts include such scenes as Hyde Park, Ranelagh Gardens, Bagging Wells, Marylebone Gardens, The Pantheon, famous in the writings of contemporary poets, essayists, and novelists. The Clubs, Coffee-Houses, Taverns were the centres of a social life that was peculiarly British. Brooks's, Boodle's Club, a notable building designed by the Adam brothers, White's Chocolate House, the famous Kit Kat, have figured in story after story. And the old Inns of England are among the most picturesque and comfortable hostelries that have ever existed.

Boodle's Club, designed by the Adam brothers and completed in 1765.

Of the many London churches, the author says that there are two dozen the product of the century. Among these he particularizes the two by Gibbs, St. Mary-le-Strand and St. Martin's-in-the-Fields, the latter showing Gibbs at his best. In the first he says Wren's influence was still dominant:

"Of all the activities of the period that of building was one of the most marked. The Great Houses dating from this time, that still exist, are but a few of the products of this amazing energy, for many have been ruthlessly swept away. In ecclesiastical architecture notable achievements remain to bear witness that the glorious traditions of Wren were preserved by such men as Hawksmoor, Gibbs, Dance, and others. On the other hand, the dwellings of the poorer classes were appalling in their wretchedness and squalor, and misery and vice crouched outside the walls of the great houses wherein a careless butterfly existence was being lived.

"But in dealing with all the facets of this remarkable period, the author does not merely record what has passed away, fascinating as that record must always be to the antiquary. He describes with infinite care, not only the relative size and appearance of the Metropolis as it then existed, with what it is to-day, but he also enumerates the relics of that period which still remain scattered all over the Capital, remotely hidden and often overlooked by a hurried and feverish generation.

"It is fortunate that the celebrities of that gay period have left behind so much in their work—Hogarth and Rowlandson on the one hand, and Addison and Walpole on the other—that it is possible to present a vivid picture of the London of Anne and the Georges.

"The whole subject has been skilfully treated, and the volume, with its fund of anecdote, its pictures of society, its reconstruction of vanished landmarks, and its enumeration of all that, happily, remains, cannot fail to appeal to all."

If the text recalls the social and literary backgrounds, the illustrations may be said to afford graphic record of the characteristic architecture. The notable architects of the period began with Vanburgh and included among others Hawksmoor, Thomas Archer, Kent, Gibbs, George Dance, Flitcroft, the Brothers Adam, and Sir William Chambers. Chippendale, Hepplewhite, and Sheraton were great names in their special field, and were keen rivals in seeking the public taste.

St. Martin's-in-the-Fields. Architect, James Gibbs, 1721.

London, like the rest of the world, is changing, many of the old churches have been condemned to make room for modern traffic, and these records of the past will have an increasing value with the years.

We can go around London town with Addison and Steele, Swift and Defoe, Goldsmith, Congreve, Farquhar, Burke, Reynolds, Gainsborough, Walpole, and visit the famous contemporary theatres with that genial egotist and historian of the stage, Colley Cibber.

THE COLONIAL ARCHITECTURE OF PHILADELPHIA. By Frank Cousins and Phil M. Riley. Illustrated. 8vo. Little, Brown & Co., Boston.

Of this handsome book, only 975 numbered copies have been printed from type.

There are few richer fields for the student of American architecture than that included in this volume. In fact, the wealth of material offered made the problem of selection a difficult one. The authors have solved it with comprehensiveness and good judgment. The contents include: Foreword. I. Philadelphia Architecture. II. Georgian Country Houses of Brick. III. City Residences of Brick. IV. Ledge Stone Country Houses. V. Plastered Stone Country Houses. VI. Hewn Stone Country Houses. VII. Doorways and Porches. VIII. Windows and Shutters. IX. Halls and Staircases. X. Mantels and Chimney Pieces. XI. Interior Wood Finish. XII. Public Buildings. Index.

In making the book the authors, while fully appreciating the human interest lent by personal and historic backgrounds, have kept in mind first the significant architectural features. The object has been to present a comprehensive showing of representative architectural types, with the historic background as a secondary but alluring interest. The many admirable illustrations show fine judgment in selection, and they are handsomely printed.

Construction of the Small House

By H. Vandervoort Walsh

Instructor in Architecture, School of Architecture, Columbia University

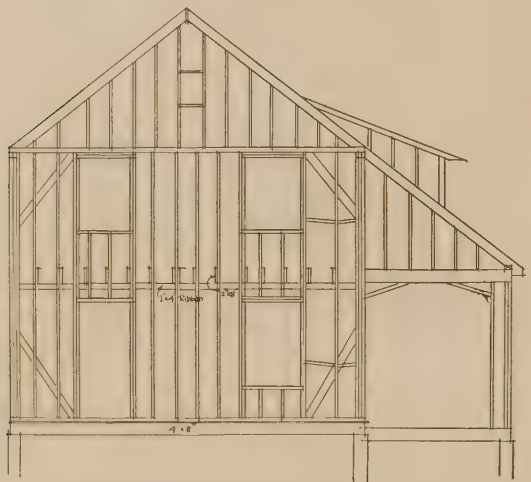
Article V

TYPES OF WOODEN-FRAME CONSTRUCTION

Types Explained

THERE are no sharp distinctions between various types of wooden-frame construction. But in order to classify certain tendencies, we will arbitrarily define four types. To these we will give the names of braced-frame, balloon-frame, combination-frame, and platform-frame.

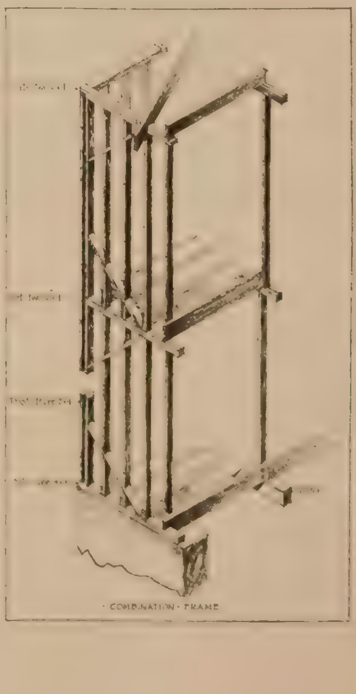
The braced-frame is the oldest type, and originated in Colonial days in New England. It was developed under the influence of a tradition of heavy, European half-timber construction, and also nourished by the abundance of wood directly at hand. The fact that nails were not made, except by hand, urged the carpenters to use methods of fastening which required as few as possible. Because of these factors, then, certain definite characteristics of this type of wooden-frame construction manifest themselves in the use of timbers, far larger than necessary for safety, and joints consisting of mortises and tenons.


TYPICAL FRAMING ELEVATION OF "WAR HOUSES".

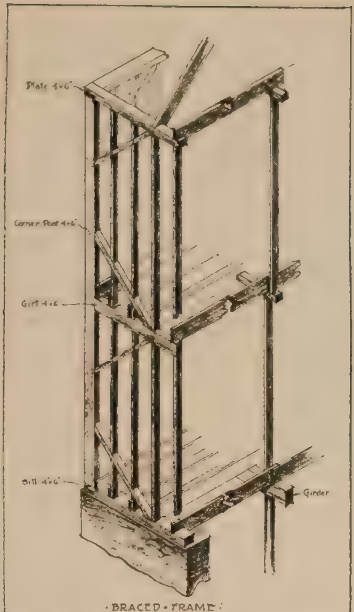
¶ As the sawmill became mechanically more rapid, and as nails were being turned out by machines more plentifully, the Yankee who went West on adventuresome trips, and cared little for a permanent dwelling, devised a system of light frame construction which became known as the balloon-frame. This was put together with the greatest speed, and required only nails for fastening all joints. The timbers which were used were standardized to one size, namely, 2″ x 4″.

Now, both of these types had advantages and disadvantages which were bound to influence later builders. Those who had been accustomed to build according to the braced-frame system found that lumber was becoming scarcer, and that nails were cheaper than they formerly were. Certain features of the balloon-frame appealed to them, such as its greater speed of construction, its smaller timbers, and lightness. On the other hand, those people who had lived in houses constructed according to the balloon system of framing found that they were very flimsy, that fires quickly consumed them, that rats and vermin could travel freely through the walls, and that, after all, they were only the most temporary sort of shelter. These folks looked back at the old methods of building, and saw the good features of solidity and permanence. We had, therefore, the growing together of the two systems of construction into a type which we call the combination-frame dwelling.

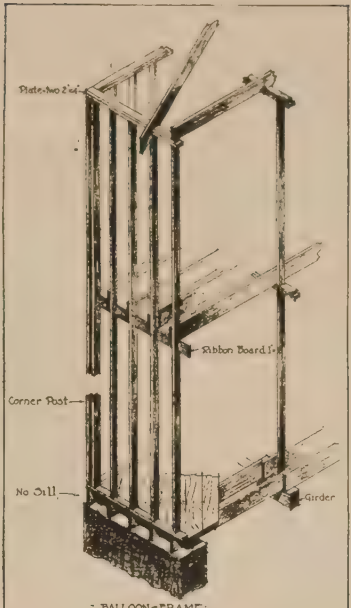
However, progress did not stop at this point. The houses built according to this newly devised system were found to settle unevenly, which cracked plaster ceilings and walls and made doors and windows into leaning parallelograms. The cause of this was found to be due to the natural shrinkage of wood as it dried out. Now, all wood shrinks mostly across the grain and not with it, so that the amount of settlement of any wooden wall depends upon the amount of cross-section of wood which it contains. If there is more in the interior partitions than in the exterior, it is certain that the floor-joists will settle down on the inside ends more than the outside. This is exactly what happened. It occurred not only in the combination-frame but in the braced and balloon frame. Various devices were introduced to avoid this defect, but all were more or less incomplete. Nevertheless, it all leads gradually to the development of the fourth type of construction, which is called the platform-frame, for lack of a better name. This frame solves the problem of uneven settlement in the wooden structure. It also makes the location of the windows of the second floor independent of those of the first floor, which is not the case with the balloon-frame, for in this type the studs extend in one piece from the sill to the plate, requiring the centring of the windows of the second floor over those in the first.


COMBINATION FRAME

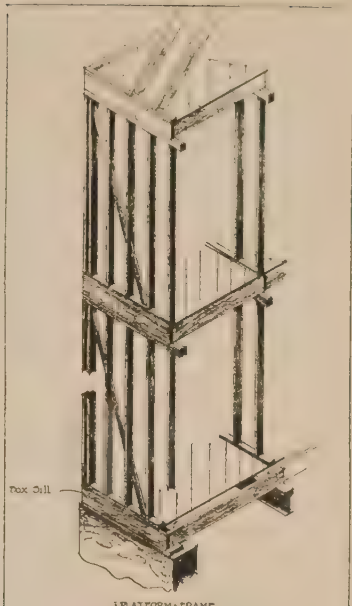
The methods which are used in constructing the small house of to-day are not as simply classified as the previous description would lead one to believe. The old, New England braced-frame has practically gone out of existence, yet



· BRACED - FRAME ·



· BALLOON - FRAME ·



· PLATFORM - FRAME

many of its features survive. The balloon-frame is used only in the cheapest sort of structures, yet many of its details are found in the modern dwelling. The combination-frame in all its many varied forms can be called the advanced type, which is not used to any great extent.

Study of Detail in the Combination-Frame

The illustrations show the four types in their entirety. But in order to fully understand the combination-frame, it is necessary to know what features of the braced-frame and balloon-frame are used to-day.

The Features of the Braced-Frame Which Have Survived

1. *The use of the girt*, because it permits the location of the second-floor windows at any point irrespective of the first-floor windows. This cannot be done when a ribbon-board is used, for this requires studs which extend continuously from sill to plate, and if any windows are to be located on the second floor, they must be placed directly over those on the first floor. The ribbon-board does not act as a stop for either vermin or fire, as does the girt. However, fire-stops can be introduced in connection with the ribbon-board, if the extra expense and thought is taken.
2. *The use of the sill*, because it serves as a firm foundation for the outside studs and first tier of floor-joists. The balloon-frame has no sill, for the floor-joists are set directly upon the top of the foundation-wall, and the exterior studs are built on top of them.
3. *The use of the corner braces*, because they stiffen the frame.

Features of the Balloon-Frame Which Have Persisted

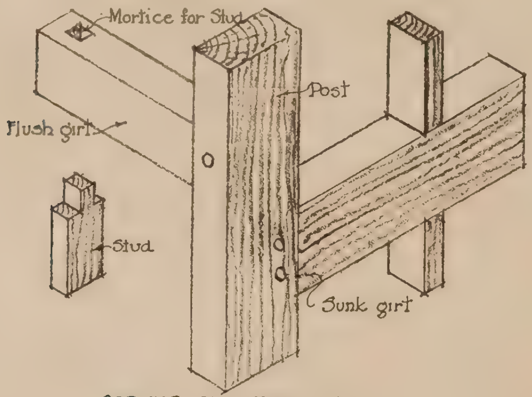
1. *The use of small timbers*, or the standardization of the 2 x 4 for all parts except the sill, because of economy. The corner-posts are made of three 2 x 4's, and the plate is made of two 2 x 4's.
2. *The use of the nailed joint*, because of its cheapness and its greater strength. It will not rattle loose when the timber seasons, as does the mortise and tenon joint in the braced-frame.
3. *The use of the ribbon-board*, in place of the girt, for those houses which are to be stuccoed, and a rigid, outside wall-frame is desired from sill to plate.
4. *The use of diagonal sheathing-boards* to brace the frame instead of the corner-pieces. The reasons for this are not very certain, since diagonal bracing with sheathing is not always effective, while it is extremely wasteful.

The combination-frame includes all of the present-day methods which make use of selected features of both the braced-frame and balloon-frame, such as was noted above. There are no rules to follow. In certain sections of the country one type is favored more than the other. Features of the balloon-frame are more in use in the West than in the East. In fact, where a house is to be covered with stucco, the balloon-frame is a better type to follow than the braced-frame, since it gives a stiffer outside wall as a backing for the stucco.

Platform-Frame

It will be noticed in the illustration how different is the amount of cross-section of wood in exterior and interior walls of the combination-frame, a thing which causes the unequal settlement previously alluded to. In order to reduce this to a minimum, it is often specified that the studs of all interior partitions be carried down to the top of the cap of the partition below or to the top of the supporting girder, thus reducing the amount of cross-section timber. This is not a complete cure, however, although it is a big improvement.

The real solution of the difficulty lies in the use of the platform system of construction. In this system, the first floor is built on top of the foundation-walls, as though it were a platform. A sill, called the box-sill, is constructed for the exterior support of the ends of the floor-joists by laying down a timber the same size as the joists and setting another one on the extreme edge in a vertical position. The angle thus formed makes a resting-box into which the floor-joist can be framed. The interior ends of the floor-joists should be supported upon a steel I-beam upon which has been placed a 2-inch-thick timber. The I-beam should be supported upon steel tube columns which have been filled with concrete. On top of the floor-joists should be nailed the under flooring, laid diagonally. The first floor then appears as a perfectly smooth platform. Now wherever there is to be erected an interior or exterior partition, a 2 x 4, called the sole piece, is nailed directly on top of the rough flooring. This serves as a sill for the studs of the partition, which are now erected vertically upon them and capped with double 2 x 4's on the top. Now the second floor is built on top of the partitions in the same manner as the first, and a new platform is constructed, so to speak. Upon this is then erected the partitions of the second floor, and on this the floor of the attic. In fact, this construction proceeds floor by floor, and each floor is an independent platform. Now if the drawings are examined it will be noticed that the amount of cross-section of wood in any one bearing partition is identically the same as in any other. The dwelling built in this way, then, cannot settle unevenly, and the cracked plaster and twisted doors will be eliminated.

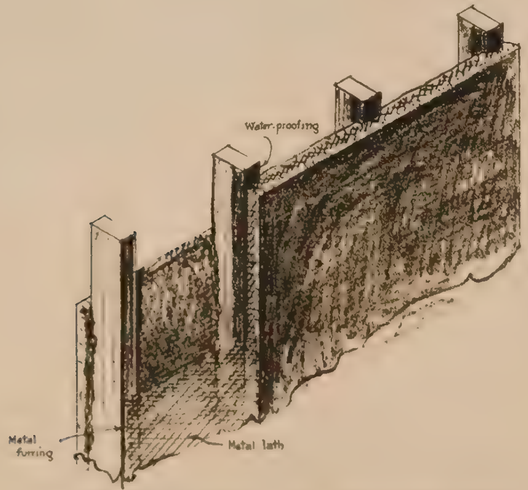


CORNER CONSTRUCTION OF
BRACED-FRAME
MORTICE & TENON JOINTS

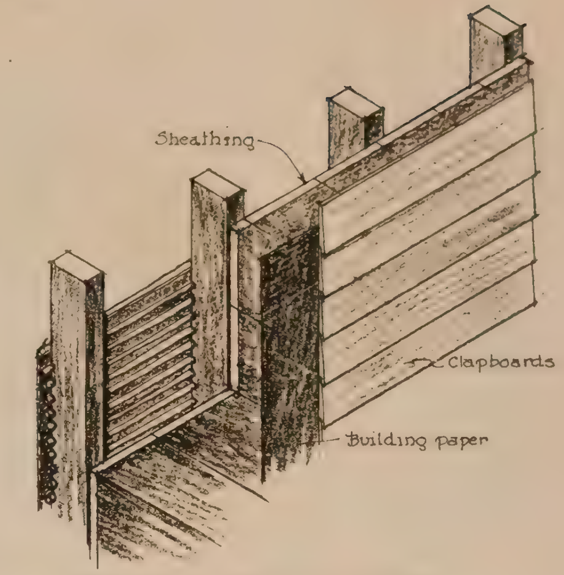
Features Common to All

There are certain features which are common to all types of frames. For instance, the framing around all doors and windows requires the use of double 2 x 4's or the use of one 4 x 4.

These framing studs around the window are set 5″ higher and 8″ wider than the dimensions of the finished window. Those about the door-openings are set 2″ higher and 4″ wider.



STUCCO ON METAL LATH OVER WOOD STUDS.



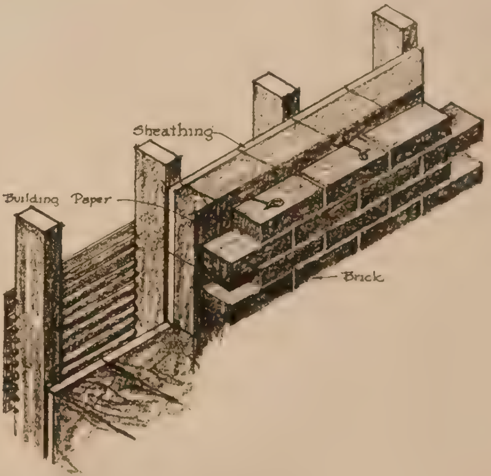
· CLAPBOARDS · OVER · WOODEN · STUDS

All use sheathing-boards of ⅞″ stock to cover the outside of the studs, and these are usually 6″ to 8″ wide.

The usual spacing of studs is 16″ on centres and they are generally of 2 x 4's, although where any pipes or flues are run through the partition they should be 2 x 6's.

Interior stud partitions should be bridged or braced once in their height, and partitions which run parallel to the floor-joists should have a capping-board, so that the proper nailing for lath can be secured. In fact, at all intersections of partitions, care should be exercised that the required nailing for lath is provided.

In the construction of roofs, the average spacing of rafters is 20″ on centres. They should be doubled around all openings. The ridge is usually of a 1″ x 10″ piece. The size of the rafters varies with the length of span and load. They are usually 2″ x 6″ for short spans and light loads, and 2″ x 8″ or 2″ x 10″ for long spans and comparatively heavy loads. Valley rafters must always be deeper and heavier than the rafters and should be designed as a girder. The hip rafters do not carry any great load, but are often made deeper to fit the incline cut of the jack rafters.



· BRICK · VENEER · OVER · WOODEN · STUDS .

All floor-joists are spaced 16″ on centres, and should be bridged. The following is the table commonly followed for good house construction, although lighter work is often specified:

SPAN	TIMBER
12′ and under	2″ x 10″ cross-bridged once.
12′ to 15′	2″ x 10″ doubled every other one, if good stiffness is desired, and bridged twice.
15′ to 20′	3″ x 12″ and of long-leaved yellow pine, crowned at centre ½″, and bridged three times.
20′ to 25′	3″ x 14″ of long-leaved yellow pine, crowned at the centre 1″ for the 25′ spans, and bridged four times.

Floor-joists should be doubled around all openings larger than 3′, and joists should be hung from the header beam by metal straps.

There are many precautions which should be taken to prevent the spread of fire in the wooden-frame house, but those will be discussed under an article devoted to this subject. Likewise the discussion of certain defects of construction which are commonly found in the speculative house will be dealt with in a later article.

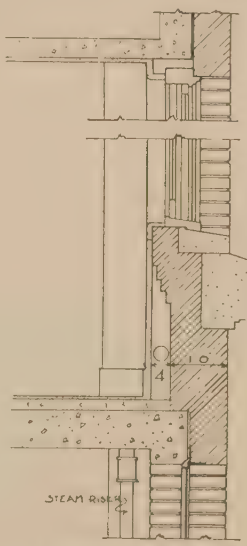
Concrete Construction

By DeWitt Clinton Pond, M.A.

THIRD ARTICLE

CONTINUING the study of column design of the 395 Hudson Street Building, it will be recalled that the roof load on column No. 9 was determined in the last article, and it was found that the section of the column, the design of which was determined by architectural considerations, was much larger than necessary. The load brought to the column at the ninth floor can be determined in much the same manner as was the roof load. First, the floor area which can be considered as being carried by the column is found. The ninth floor, unlike the roof, is supported by columns which form bays 20 feet square, and there are no 40-foot spans to be contended with. Because of this the area carried by column 9 is 10 feet long by 20 feet wide and contains 200 square feet. The unit live load for this floor is recorded as 100 pounds per square foot, as this floor is to be used for office purposes. The dead load is figured in much the same manner as that of the roof, that is, the thickness of the slab is assumed and its weight determined, to which are added the weights of the fill and finish. The slab construction under the ninth floor is flat-slab construction, and as the panel length is 20 feet, the thickness of the typical slab will be considered as 8 inches. This slab will weigh 96 pounds per square foot of superficial floor area. On top of this will be a 2-inch fill of cinder concrete and a 1-inch cement finish. The fill will weigh 16 pounds and the finish will be taken as weighing 12 pounds, so that when all these three loads are added together the total floor dead load will be 124 pounds. This will actually be considered as 125 pounds, on account of the additional weight of the small drop panel, which will be designed later, and which is found at the head of the column.

The total live load per panel will be 20,000 pounds and the total dead load per panel will be 25,000 pounds, and, as the live load cannot be reduced for this floor, it only remains to add the weight of the column itself and the wall load to find the total load on the section of column which extends between the eighth and ninth floors. The column is nearly 13 feet high, and has a cross-sectional area of 3 feet 10 inches by 1 foot 8 inches. The thickness—1 foot 8 inches—is determined by the rule that in flat-slab construction the least dimension of a column is one-twelfth of the span length. The area of column is 6.35 square feet, and it will contain 82.55 cubic feet. Its weight will be 11,887 pounds, or 12,000 pounds, allowing for the bracket at the column head.



FIGVRE VIII

In order to understand how the wall load is figured it will be necessary to study Fig. VIII. This is a section through the wall at the ninth floor, where a somewhat unusual condition is found. It will be noticed that the brickwork is corbelled out under the window. This was done by the architects, so that steam lines could be placed in the panel-backs under the windows, but also that there would be sufficient masonry to carry the window and have an 8-inch reveal. The brickwork under the windows will be considered as being 12 inches thick, but that in the mullions will be taken as 16 inches thick. As the columns are spaced 20 feet on centres, and as they are 3 feet 10 inches wide, the space between them will be 16 feet 2 inches, and the masonry between them, extending in height from the angle iron lintel over the head of the eighth-story window to the bottom of the daylight opening of the ninth-story window, will have an area measuring 4 feet 2½ inches high by 16 feet 2 inches long. This will contain 68 square feet of superficial wall area and, as the wall is considered as being 12 inches thick, will weigh 68 × 120 = 8,160 pounds. As there are three windows between the columns, and each is 4 feet wide, there will be a total width of masonry in the mullions of 16 feet 2 inches minus 12 feet, or 4 feet 2 inches. These are 1 foot and 4 inches thick and 8 feet 9 inches high, and will weigh 4.16 × 1.33 × 8.75 × 120 = 5,820 pounds. It will be noticed that the spandrel is only 8 inches thick where the concrete band is shown, but the additional weight figured in the spandrel will be offset by the brick facing on the column, as well as the weight of the window, so the total wall load will be considered as 8.150 + 5,820 = 13,970, or, roughly, as 14,000 pounds.

The total loads on the column section will be 20,000 + 25,000 + 12,000 + 14,000 = 71,000 pounds. When this is added to the load on the column at the roof, the total load will be 136,000 pounds.

Because of considerations dealing with flat slab construction, which have been stated above, the column is made 1 foot 8 inches thick. Its width is 3 feet 10 inches, as explained in the last article, so the total area is 6.35 square feet, and the allowable stress on the concrete is 6.35 × 144 × 500 = 457,000 pounds. As ½ of 1 per cent of vertical steel must be used, according to the code, there will have to be 4.57 square inches of vertical reinforcing, which will carry 32,000 pounds. Adding these two stresses together the result—489,000 pounds—is found to be much larger than necessary to carry the actual load. The actual size of vertical bars and hoops will have to be determined and listed in the column schedule.

The load brought to the column at the eighth floor is greater than that determined above, as the live load is increased to 200 pounds per square foot. This floor is used as a shop floor and this is the reason for the increase. The slab thickness will be considered as 8½ inches, and the weight of the slab will be 102 pounds per square foot. Adding the weight of the fill, finish, and drop panel, the total dead load will be 135 pounds per square foot. It must be remembered that the slab thicknesses are only assumed, when column loads are considered, and are subject to revision when the actual design of the floor slab is undertaken, but as the variation is usually very slight, the assumptions made are accurate enough when the total load on the column is taken into consideration.

The total live load on the panel is 200 × 200 = 40,000 pounds. This can be reduced 5 per cent in accordance with the code, so the live load brought to the column at the eighth floor will be considered as 38,000 pounds. The total dead load will be 135 × 200 = 27,000 pounds. The column load will be considered the same as that of the section above, or 12,000 pounds. The wall load will be determined on the basis that the section of wall above the slab is 1 foot thick and 16 feet 2 inches long, and 3 feet 4¼ inches high (Fig. VIII), and that the weight of the brick facing on the column and slab, the masonry between the windows and the column, and the weight of the window itself must be added to the weight of the wall.

In order to avoid figuring the weight of the masonry facing on the spandrel beam, there will be additional height figured in the curtain wall. This will be considered as 3 feet 9 inches high, and its weight will be 3.75 × 16.17 × 120 = 7,277 pounds. The weight of the masonry facing on the column will be .33 × 3.83 × 13 × 120 = 1,992 pounds. The weight of the masonry between the windows and the column will be determined on the basis that this section of wall is 1 foot 4 inches thick, and slightly higher than the window opening, as there is a section of this brickwork that extends down to the lintel. By referring to the plan (Fig. IX) and bearing the considerations given above in mind, the following calculations for determining the weight of this part of the wall will be clear: 1.25 × 8.8 × 1.33 × 120 = 1,756 pounds. The window measures 8 feet 6¾ inches high by 14 feet 11⅛ inches long, and will contain 127.7 square feet. As steel-sash windows are considered as weighing 10 pounds per square foot, this will weigh 1,277 pounds. The total wall load will be 7,277 + 1,992 + 1,756 + 1,277 = 12,302 pounds.

There is a spandrel beam, shown in the section (Fig. VIII), which should be added to this column load. The beam is 1 foot 2 inches deep over all, and will extend 5½ inches below the slab. A portion of this beam was figured in the drop panel in the floor load, but it is safe to assume that if the additional concrete is figured as 5 inches deep, 7 inches wide, and 16 feet long, the total loading will be determined accurately enough. The beam, having a section of 35 square inches, will weigh 35 pounds per lineal foot, and the total weight of the entire length will be 35 × 16 = 560 pounds. The total wall load will be 12,302 + 560 = 12,862 pounds, or, roughly, 13,000 pounds.

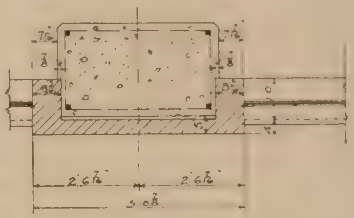


FIGURE IX

The total of the eighth-floor load on the section of column between the seventh and eighth floors is given by adding all the loads determined above.

38,000	pounds live load.
27,000	" dead load.
12,000	" column load.
13,000	" wall load.
90,000	" total.

Adding this to the combined loads of the roof and ninth floor, the total column load is 136,000 + 90,000 = 226,000 pounds.

The column section remains the same as given above until a point is reached where the total load is greater than 457,000 pounds, which has been given as the safe load for this section.

It is hardly necessary to go through all the calculations for all the loads on the remaining floors. The loading at the eighth floor is typical, but as the live load decreases 5 per cent, the loads at each of the lower floors become slightly smaller, until the point is reached where the column increases in size, and then the increase in the column load about counteracts the decrease in the live load.

Another item in determining the loading on columns should be mentioned, however, and this is the loading due to partitions. In a warehouse of this type all partitions are substantially constructed of fireproof material—in the present case reinforced concrete, 6 inches thick. Such a partition occurs on the seventh floor, and the portion which bears on the column will be considered 12 feet high, 8 feet long, and 6 inches thick, and will weigh approximately 7,000 pounds.

As shown in the table below, this load is added to the wall load on that section of column between the sixth and seventh floors.

The loads can be arranged in columns such as shown herewith.

STORY	TOTAL LOAD PER STORY	TOTAL LOAD
9	65,000	65,000
8	71,000	136,000
7	90,000	226,000
6	97,000	323,000
5	89,000	412,000
4	88,000	500,000
3	88,000	588,000
2	89,000	677,000
1	89,000	766,000
B	209,000	975,000

It will be noticed that at the section between the fourth and fifth floors the load becomes larger than the safe load figured for this section. It will therefore be necessary to increase the section. The length—3 feet 10 inches—is determined by architectural requirements, so the only dimension which can be increased is the thickness, and for the purpose of study it will be assumed that this is increased to 1 foot 9 inches. The area of the column will be 3.83 × 1.75 × 144 = 965 square inches. This will support 482,500 pounds. One-half of 1 per cent of this area is 4.82 square inches. This multiplied by the allowable stress in steel—7,000 pounds per square inch—will give the supporting value for the vertical reinforcement. 33,740 pounds added to 482,500 will equal 516,240 pounds as the supporting value of the section. As the actual downward load is only 500,000 pounds, this section is large enough. The required area of steel can be made up of four 1⅛-inch square bars. The next load is the total at the fourth-floor level, which is 588,000 pounds. As this is greater than 516,240 pounds—the safe load for the section designed above—another section will have to be designed. Unless the architect has a table giving the safe loads on concrete columns of this type, he will have to discover the area of this new section by trial. It will be assumed that the thickness will be increased to 2 feet. The section will then measure 24 inches by 46 inches, and will contain 1,104 square inches. The concrete will support 552,000 pounds. There must be 5.52 square inches of steel, which will support 38,640 pounds, and the total 590,640 pounds. This is very near to the required strength of the column. The steel will be made up of four 1¼-inch square bars.

In like manner it can be determined that for the portion of column between the second and third floors the cross-section must measure 2 feet 4 inches by 3 feet 10 inches, and the thickness increases to 2 feet 7 inches in the first-story height, and that the basement section increases materially in area, and is 3 feet 10 inches square. This is due to the fact that the live load at the first floor is 1,000 pounds per square foot, as stated in the first article, and that there is a proportionate increase in the dead load and area of column. By referring to the table of loads given above it can be seen that the load at the first-floor level is much larger than that at the second-floor level.

Column No. 10 has a much larger load at the roof level, as the framing at the roof is such that there is a much larger floor area to be supported. With this exception, however, the design is similar to that of column 9, and column 11 is approximately the same as 9.

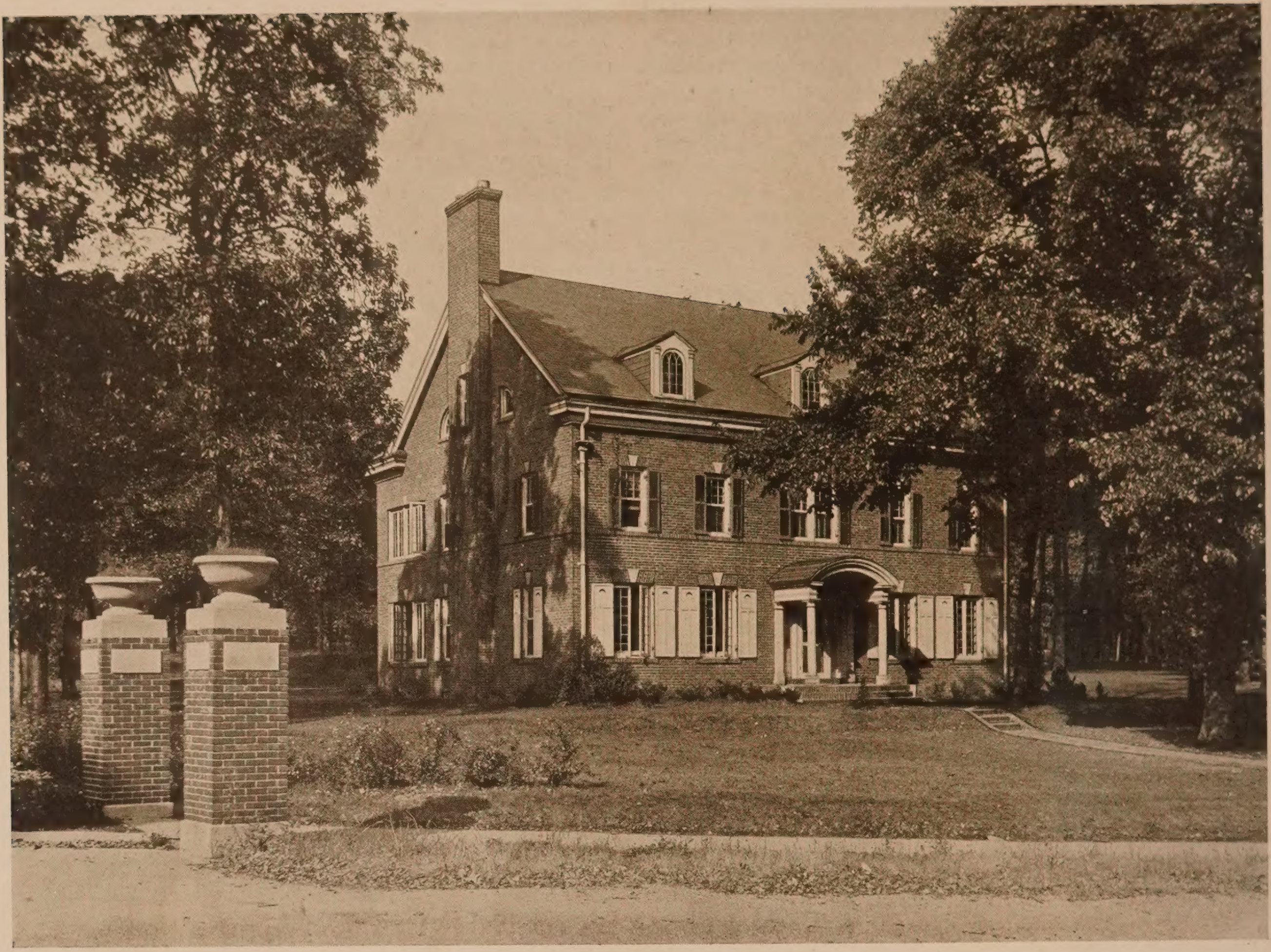
Column No. 12 is a corner column, and, therefore, it supports only one-half the floor load that is carried by each of the other wall columns. The wall load increases, as for architectural reasons it is desirable to have a heavier masonry pier at the corner than between the windows. It is desirable to have the corner column square, although there are cases in other buildings where corner columns are designed in the shape of a large L. Assuming, in the present case, that on account of the heavy wall load the total load at the roof level is 83,000 pounds, and that, in order to avoid too much eccentricity in the loading, the column will be 2 feet square, it is necessary to see if this section will carry the load imposed upon it.

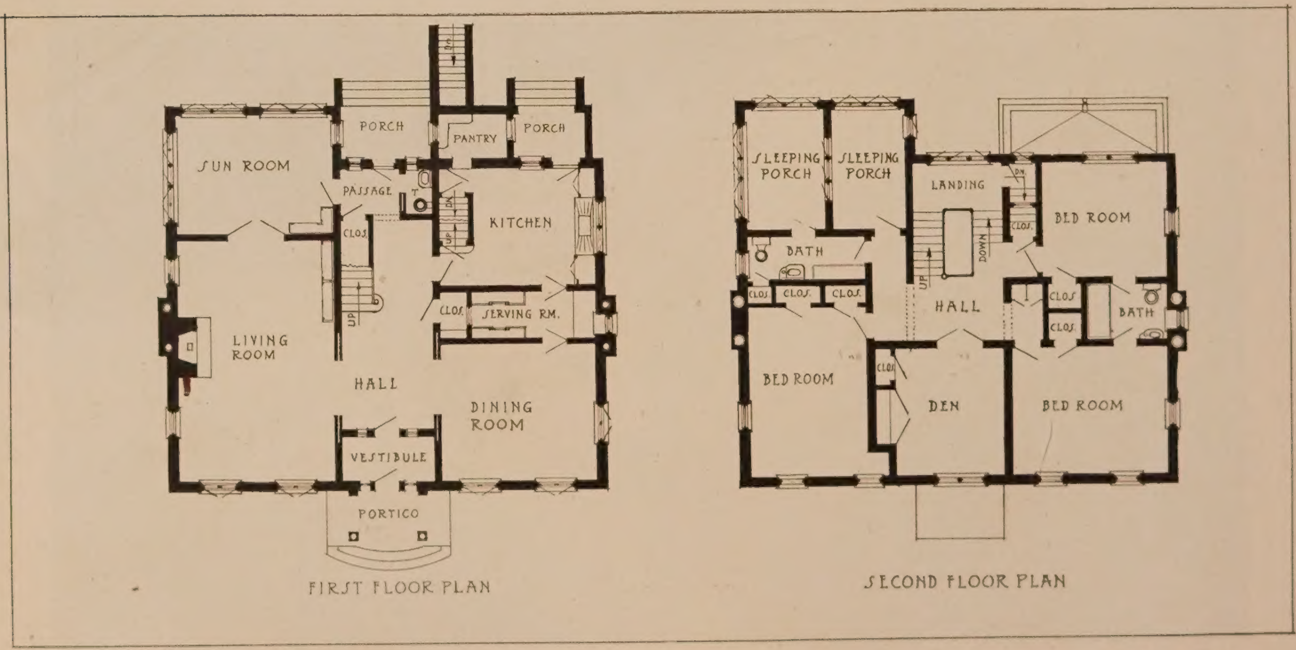
A column 24 inches square will contain 576 square inches, and the concrete will support 288,000 pounds. The steel will carry 20,160 pounds, and the column will support 308,160 pounds, which is much greater than the actual load.

Where conditions are similar, as in the case of the wall columns 9, 10, 11, 13, 14, and 15, the loads on the columns do not vary greatly. The smallest load is 976,000 pounds at the footing of column 9, and the greatest is 1,014,000 pounds at the footing of column 15. The difference in these total loads is due principally to the difference in floor area carried by the columns at the roof. It will be recalled that No. 9 carried an area of only 100 square feet, where No. 15 carried an area of 400 square feet, due to the framing where the 40-foot spans were found.

There is no more need to investigate the design of the exterior columns, as there are no more types of loading or design than those already referred to. In the next article the design of interior columns will be investigated.

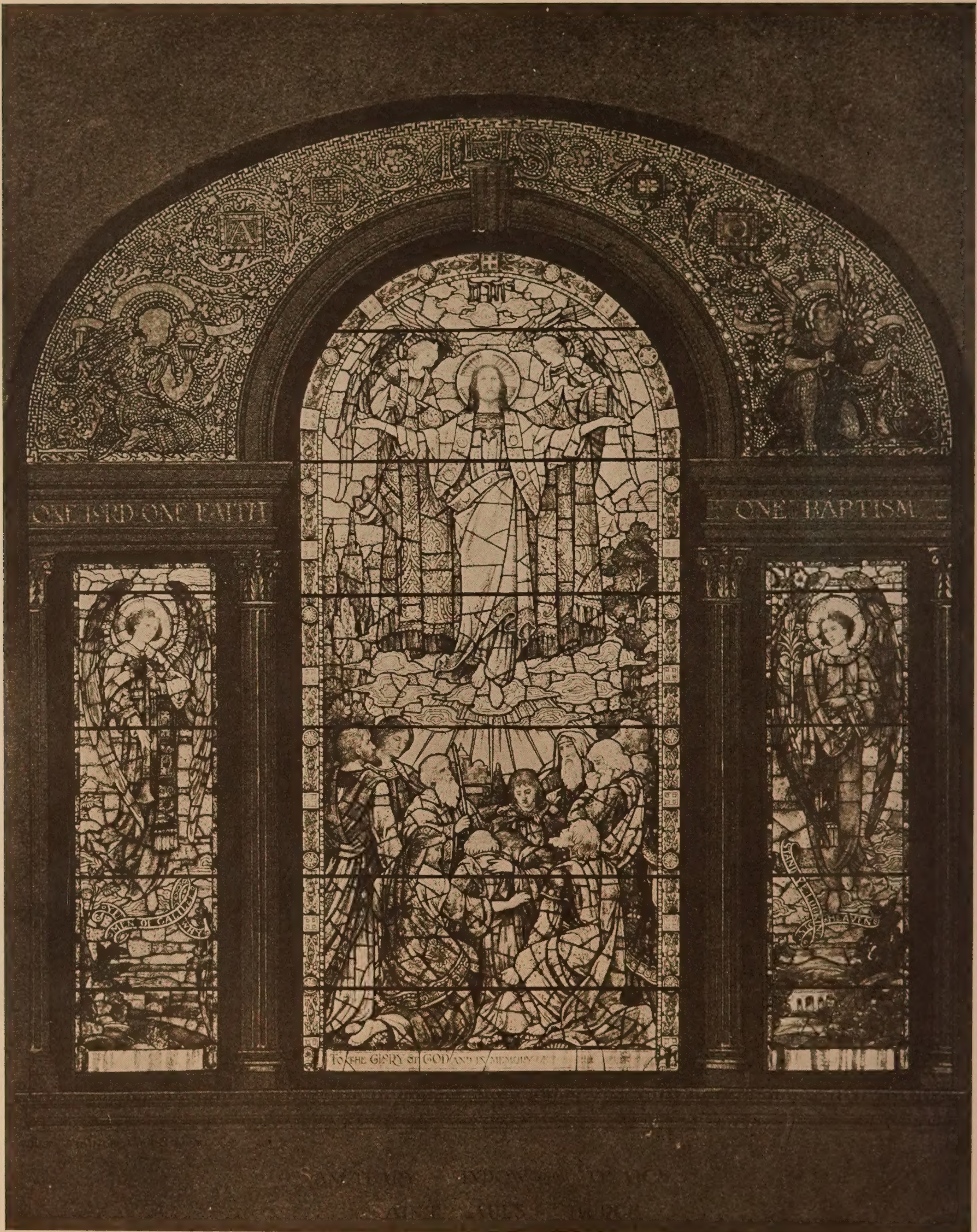
SCHLEICHER & SONS' PIANO FACTORY, STAMFORD, CONN.





HOUSE AND PLANS, E. O. DAMON, JR., FORT DODGE, IOWA.

Damon & O'Meara, Architects.



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